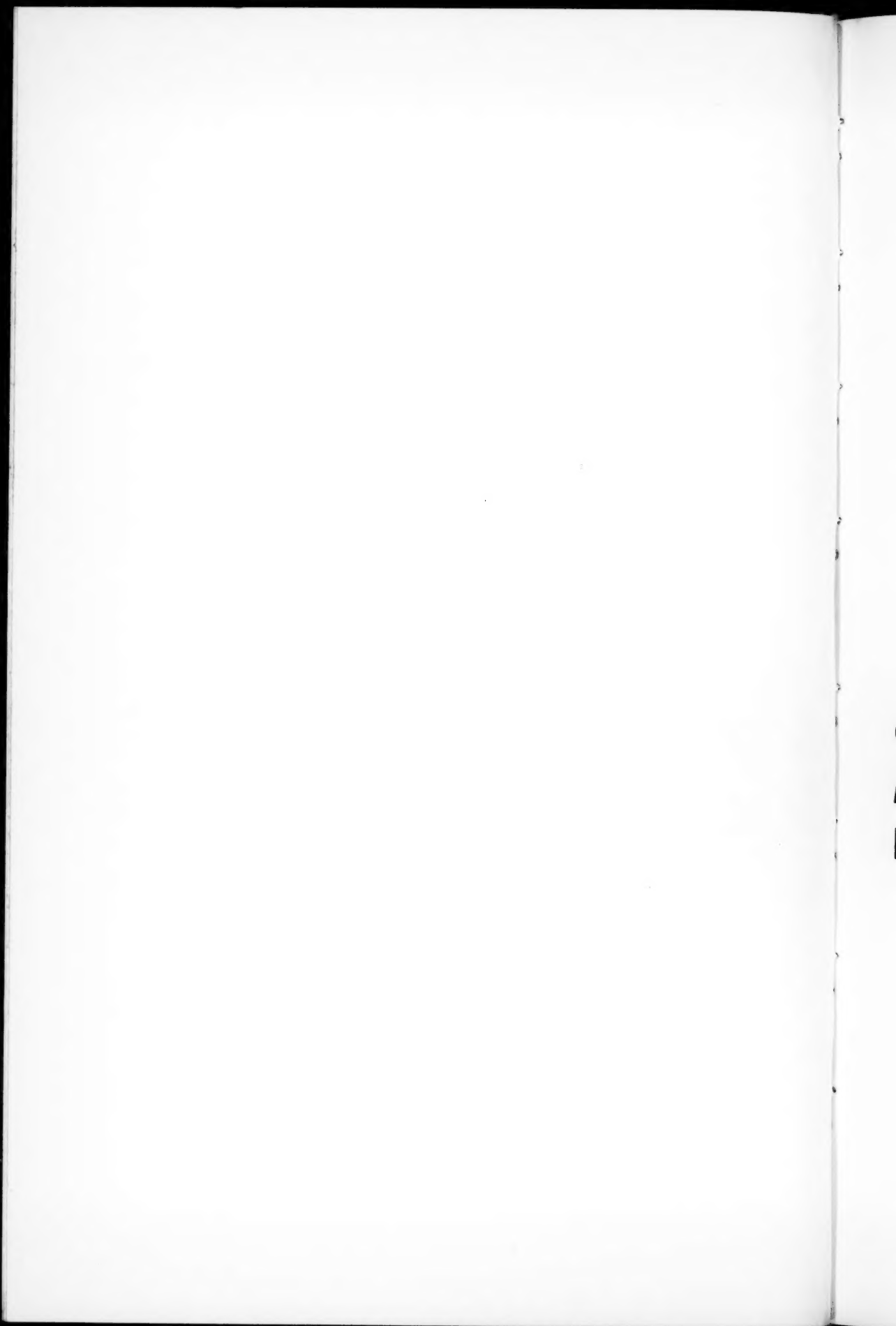




# **CALIFORNIA MANAGEMENT REVIEW**

Spring, 1959

*VOLUME 1 • NUMBER 3*



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Edited under the direction of the Faculties of the Depart-  
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**CALIFORNIA  
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NEIL H. JACOBY

# How to Stop Inflation

*A former member of the President's Council of Economic Advisers makes concrete recommendations about a major problem of public policy.*

As our country moves forward into the second half of the twentieth century, Americans generally are enjoying an unparalleled state of well-being, despite the unemployment which currently afflicts some citizens. The U. S. economy continues to be by far the most productive in the world. It easily excels all others in per capita real output and in widely diffused real income.

Yet we have recently become aware of vital economic problems which demand our earnest attention. I do not refer to those short run problems of avoiding serious cyclical booms and recessions. I refer to long-run problems of structural change and adaptation of the U. S. economy.

## THE ACCELERATING PACE OF WORLD CHANGE

It is manifest to thoughtful persons that both the internal and the external environmental conditions of the U. S. economy are changing rapidly. Moreover, the pace of change seems to be accelerating throughout the world. Scientific and technical knowledge increases at a fantastic rate. Population is exploding. Space is shrinking. Nationalism and demands for economic betterment are rampant in the less

developed regions. Meanwhile, Japan and the advanced countries of Western Europe have become potent competitors of the U. S. in world markets.

Towering over these powerful forces, which are destroying old political arrangements and are bringing new tensions and instabilities as well as opportunities into the world, is the emergence of the Soviet Union and Communist China as formidable economic, political and military rivals of the United States. By regimenting people to the service of a totalitarian state and by suppressing individual liberties they have risen greatly in power and influence. Their leaders see in the United States the antithesis to their ideologies. Their hostility threatens our national security.

Only ten years ago the United States was the most powerful nation in the history of man, relatively as well as absolutely. This cannot be said today. What will be our position a decade hence?

## SALIENT ECONOMIC PROBLEMS

Among the salient economic problems which grow out of these kaleidoscopic changes and now confront the American people are the following:

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MR. JACOBY is Professor and Dean of the Graduate School of Business Administration at the University of California, Los Angeles. The article above is a statement to the Joint Economic Committee of Congress, March 23, 1959.

1. Economic provision for national security
2. Increasing efficiency and economic growth
3. Fostering economic growth throughout the free and uncommitted world
4. Strengthening our position in international trade
5. Defending the purchasing power of the dollar
6. Invigorating competition throughout the economy
7. Adapting to rapid population increase
8. Increasing the geographic and occupational mobility of people and resources
9. Improving education of all kinds and at all levels.

Obviously, these problems are complex and interrelated and cannot all be treated in a single article. The list does not include reference to deep economic depressions, because world conditions and our internal economic arrangements now make them highly unlikely.

The theory has been advanced that the United States is now so "affluent" that we should place less emphasis upon productivity and increasing output, and should adopt public policies to make unemployment more congenial. I do not regard this theory as being worthy of serious attention. The very opposite is the truth. Our economy requires vast amounts of capital for educational and transportation facilities, for resource development, for housing and community assets. Huge increases are necessary in the output of consumer goods to meet the demands of a rapidly increasing population of which an increasing fraction will not be in the labor force. According to a recent survey, \$95 billions is needed merely to modernize our obsolete industrial equipment. U. S. foreign investment should be increased by many billions a year if our country is to play its role as economic leader of the Free World. All these factors, as well as our relatively declining world economic position, now call for increased emphasis on productivity, efficiency, and economic growth.

The agenda of unsolved structural economic problems has been growing. Time is running out. We must find ways of resolving basic economic problems as rapidly as changing technological and cultural factors are creating them.

### THE KEY PROBLEM: GROWTH WITHOUT INFLATION

Among the salient economic problems confronting our society I believe that the paramount problem is to maintain reasonable stability of the price level in a vigorously growing free economy. This problem rates a first priority on our attention because solutions of many other problems will accompany a solution to this one. For example, a primary task of the next generation will be to find the capital to equip our expanding labor force with the most efficient tools and machinery in a world undergoing a second Industrial Revolution. A stable price level will help solve this problem by strengthening incentives to save and enlarging savings available for capital formation. Again, enlargement of international investment throughout the Free World will be an issue of first magnitude in coming years. The environment will be conducive to active international investment only if the largest capital-supplying country has a monetary unit of stable value. Achieving a reduction of international barriers to trade and payments also forms a salient task of the future. Yet the great enemy of liberal international trading and financing policies is inflation. When, under an inflationary regime, price levels in different countries move upward at different rates, uncertainties increase and restrictions on trade are introduced to protect monetary reserves.

Wherever we turn, a dollar of dependable value immensely simplifies our economic tasks. The structural changes in the U. S. economy necessary to obtain rapid growth with price level stability require public policies which advance us toward other economic goals; they

should be adopted even if the problem of inflation did not exist. In solving the problem of rapid growth with a stable dollar we shall strengthen the U. S. economy in many ways.

We assume that the American people want full production and employment and rapid growth of the real incomes along with a dollar of dependable buying power. In the end they will accept neither stunted economic growth nor a network of governmental controls of prices and wages. Nor will they accept gradual inflation as a "necessary price" of full employment.

I shall not repeat here the arguments against inflation, gradual or otherwise. In testimony before the Joint Economic Committee of Congress a year ago, and elsewhere, I have explained why any persistent rise in the price level would be a drag upon long run economic progress.<sup>1</sup> During the past year, the consensus on this matter has been growing, despite a few dissenters. The sharp drop in U. S. exports, rising imports, and the outflow of gold has added a powerful new reason for stability of the U. S. cost and price levels. Inflation was formerly seen only as a costly luxury; now we see it as a potential threat to national survival in a world whose raw materials we increasingly need. Here, we shall assume that gradual inflation is uneconomic as well as inequitable, and

<sup>1</sup> *The Relationship of Prices to Economic Stability and Growth*, Compendium of Papers submitted by Panelists Appearing before the Joint Economic Committee (Washington: U. S. Gov't. Printing Office, March 31, 1958). The consensus against creeping inflation is well expressed by G. L. Bach, *Inflation—A Study in Economic Ethics and Politics* (Providence: Brown University Press, 1958) and by A. F. Burns in *U. S. Monetary Policy* (New York: American Assembly, 1959). My own views on the economic effects of creeping inflation appear in *Harvard Business Review*, May-June 1957 and Jan.-Feb. 1958 and in *Problems of U. S. Economic Development*, Vol. I (New York: Committee for Economic Development, 1958) p. 153. S. H. Slichter and A. H. Hansen, on the contrary, accept creeping inflation as a desirable or at least inevitable concomitant of economic policies to maintain full employment. See Hansen, *The American Economy* (New York: McGraw Hill, 1957) and Slichter, "On the Side of Inflation," *Harvard Business Review*, Sept.-Oct. 1957.

we shall confine our attention to rather specific public policies for preventing its recurrence. Direct controls to repress inflation, and escalator clauses to accommodate to it, are now generally seen as evasions of the problem.

Despite general agreement that a stable price level fosters economic growth and should, along with full employment and free markets, be an accepted goal of public policy, surprisingly little has been written on ways and means of achieving this end. There is even much dissension over the causes of inflation. The popular view is that creeping inflation arises from excessive federal spending, even when the federal budget is balanced on a consolidated cash basis, and from wage increases that outrun gains in productivity and force up prices. Hence the remedies most often suggested are a reduction in federal expenditure and "restraint" by union and management officers in making wage agreements. But this diagnosis and remedy are plainly deficient. Although systematic control of federal expenditures is important, they cannot be the salient cause of inflation because they form only about 15 per cent of aggregate demand. If the pull of excessive aggregate demand causes inflation, we should be more likely to find the culprits among those who spend the other 85 per cent. There have been extended periods of rising price levels when federal expenditures were falling (e.g., 1945-48), and stable price levels when federal outlays were rising (e.g., 1952-53). At the time of writing (February 1959) there is no excessive demand and much slack in the U. S. economy.

Granted that the upward push of wages on prices has played an important role in inflation, experience has shown that admonitions to use "restraint" are not very effective in producing non-inflationary wage agreements. Restraint must grow out of the bargaining parties' conception of their own interests rather than out of their regard for the general interests of society.

Not only is the popular analysis of creeping inflation unsatisfactory, but it leads to futile efforts to assign the blame to particular groups of people, such as "aggressive" union leaders, "monopolistic" business executives, Congressional "spenders," etc. As a result, public discussion of the problem becomes emotional and remedial action is stultified. The problem really arises from general systemic faults in economic structure and policy, and not from the misbehavior of certain people.

Let us view creeping inflation in a long perspective, develop a theory to account for it, and then deduce from this theory a feasible program of public policies to prevent it in the future. Time allows us to paint only with broad strokes of the brush; the work of many economists and policy makers will be required to fill in necessary details.

### THEORY OF CREEPING INFLATION

In formulating a theory of creeping inflation, we do well to recall some simple arithmetic. Inflation is defined as a significant rise in the Consumers Price Index, an average of the prices of 300 commodities and services sold in a sample of retail establishments in 46 cities. Now if we are to avoid inflation in the short run, it is clearly necessary that when some *individual* prices rise, other individual prices shall decline. And if we are to avoid inflation in the long run, when the *average* of prices lifts during the expansionary phases of business cycles, it is necessary that the average level of prices shall decline at other times. Simple arithmetic demonstrates the need for more two-way flexibility in individual prices and in the average of prices if we are to avoid creeping inflation. It indicates that avoiding inflation requires attention to what may be called the "structural flexibility" of our economy as well as to the maintenance of aggregate demand at an appropriate level through time.

The creeping inflation which has marred the performance of the U. S. economy in recent

years has resulted from two major defects: *first*, insufficiently flexible monetary and fiscal measures to offset cyclical changes in private demand and to hold aggregate demand around full employment levels;<sup>2</sup> *secondly*, insufficient flexibility in prices and in movements of resources, caused by inadequate competition and by the interference of government with competitive markets. The remedy for creeping inflation requires both more sensitive and powerful monetary and fiscal actions to regulate aggregate demand, and governmental measures to make the U. S. economy structurally flexible with respect to individual prices and movements of resources.

Recent efforts to stop creeping inflation have been disappointing because they have involved reliance only upon restrictive monetary and fiscal policies, without concurrent actions to increase structural flexibility. Highly restrictive monetary and fiscal measures, which cut governmental expenditures to the bone, raise taxes, and make credit expensive and hard to get, can probably stop inflation. They reduce aggregate demand so severely as to create unemployment, hold down prices, and moderate wage agreements to a point where the wage-cost push on prices is diminished. But in an economy where resource movements have become too slow, competition is not pervasive, and enough individual prices do not decline quickly enough in the face of lowered demand, a highly restrictive monetary-fiscal policy will produce persistent unemployment. It will require a sacrifice of normal economic progress which the American people will not accept indefinitely.

Those who argue that gradual inflation is inevitable, even desirable, as a means of increasing the average rate of growth in the real output of the U. S. economy tacitly assume that present rigidities in the price and resource structure cannot be reduced. They take them as data. By contrasting the slow growth and un-

<sup>2</sup> Defined to mean that at least 96 per cent of the labor force is productively employed, as an annual average.

employment associated with a non-inflationary monetary-fiscal policy in a structurally rigid economy with the more rapid growth obtainable under a strongly expansionary monetary-fiscal policy, they conclude that slow inflation must be accepted as the inescapable concomitant of satisfactory economic growth. What they fail to understand is that even more rapid growth would be possible under a reasonably stable average of prices, if the price and resource structure were sufficiently flexible. The following table provides a schematic representation of the relationships:

Case	Price and Resource Structure	Monetary-Fiscal Policy	Rate of Real Economic Growth
I	Flexible	Non-Inflationary	Rapid
II	Rigid	Inflationary	Medium
III	Rigid	Non-Inflationary	Slow

During recent years the U. S. economy has oscillated between Cases II and III. The optimal course of action clearly is to reduce structural rigidities and make the economy conform to Case I, in order to have the rapid real growth which a stable price level makes possible.

The restoration of structural flexibility is basically a matter of creating the framework for workable competition in many markets from which it is now absent. Competition in open markets is the fundamental principle of a free versus a centrally directed economy. If competition is pervasive and resources are mobile, enough prices will decline quickly enough when aggregate demand is shrinking and enough resources will move into more remunerative industries, so that sensitive monetary-fiscal restraints will serve to prevent inflation without creating "pockets" of unemployment and economic stagnation. Conversely, an expansionary monetary-fiscal policy will more rapidly induce movements of resources into the most urgent uses, enabling total output to grow for a longer time without producing "bottle-necks" and inordinate price increases.

If the people of the United States squarely face the need to increase the structural flexibility of the economy as well as to improve monetary and fiscal controls, we will succeed in realizing our full potential of growth while avoiding a debilitating depreciation of the dollar. Even moderate gains in structural flexibility will suffice to keep the price level reasonably stable, so long as productivity rises steadily.

Let us now outline the elements of a program of public policy which will help solve the problem of creeping inflation. Because structural flexibility has received relatively little attention in discussions of inflation, it merits fuller attention than improvements in monetary-fiscal policy. Although they do not exhaust the subject, I shall focus attention on necessary reforms in five fields of economic policy: anti-monopoly; agriculture, international trade, stockpiling, and federal taxation.<sup>3</sup>

### ANTIMONOPOLY POLICIES

Actions to make competition more vigorous and pervasive in the United States are an important part of a program for price-level stability. Stern enforcement of the antitrust laws, their extension to all kinds of private economic activity, and other measures to invigorate competition will help to make individual prices and wage-rates more responsive to changes in demand, will augment productivity, will moderate the wage-price spiral, and thereby reduce inflationary pressures.

While competition should be enforced in all segments of the economy, labor union activities are of greatest present concern. The main legal instruments for enforcing competition, the Sherman and Clayton Acts, were designed to apply primarily to business firms and to com-

<sup>3</sup> Removal of structural rigidities in the economy suggests many additional lines of policy action. For example, private pension and retirement programs tend to impede occupational and geographical changes of employment, by not vesting the employer's contribution in the employee. This problem requires public attention.

modity markets, and labor unions and most professional and cooperative organizations are exempt from most of their provisions. Meanwhile, some unions have acquired great power over labor markets, which they exercise in a number of ways to push up prices or to prevent prices from falling. While inflationary wage agreements have received most attention, union restrictions upon entry of workers into trades, and union working rules to reduce productivity ("featherbedding") are also important inflationary factors especially in transportation and the building trades. Being exempt from the antitrust laws, unions may do many things to "restrain trade" which businessmen cannot do. Because labor income comprises 62 per cent of national income, it is evident that the impact of wages on the consumer's price level is pervasive. Public regulation of labor unions, through special legislation as well as the antitrust laws, is therefore necessary to assure that their activities will be compatible with the public interest in a stable price level, efficient production, and workable competition.

Labor markets differ in many ways from commodity markets, and a fresh body of law needs to be developed to deal with their special problems. These problems include gross inequality of bargaining power between big unions and small employers, organizational and jurisdictional strikes, undue restrictions upon membership, picketing, secondary boycotts, union support of price-fixing agreements, and internal union affairs. Some union activities should be made illegal; others are imperfectly understood and the relevant law would have to be developed on a case-by-case basis. In any event, it is difficult to understand how objection can be made to the principle that antimonopoly legislation should apply to all kinds of private economic activities whether carried on by businesses, unions, professional associations, cooperatives, or any other individual or group. A comprehensive rather than a fragmentary approach to the maintenance of

a competitive order is needed. Although the extension of antitrust laws to unions could not be expected to produce dramatic results, it would be a symbol of public opinion and policy which would influence union activities as constructively as it has influenced business management in the past. The more obvious applications of the antitrust laws to unions would be mitigation of unreasonable conditions of membership and uneconomic working rules as "restraints of trade." Union mergers or splits present more difficult areas of application. The antitrust laws presumably would not apply to collective bargaining or wage agreements *per se*.

### AGRICULTURAL POLICY

Food and apparel have 38 per cent of the weighting in the Consumers Price Index.<sup>4</sup> Because prices of most such items are directly or indirectly affected by current agricultural policies, it is clear that our efforts to support prices of basic farm commodities at "parity" are a potent source of inflationary pressure. Our agricultural policies have operated to maintain or raise the prices of food and fiber in the face of striking technological advances that have reduced costs of production and would have brought lower prices in the absence of governmental intervention. At the same time, our policies have built up huge surpluses, whose disposal abroad impairs friendly relations with other countries. Farm prices would have declined in free markets, helping to keep the cost of living stable and removing some of the wage-push exerted on costs *via* escalation clauses in wage agreements. About 4 million workers are employed under contracts specifically requiring quarterly or annual adjustment of wages to movements of the CPI, and this Index is a consideration in virtually every wage determination.<sup>5</sup>

<sup>4</sup> Average Retail Prices: *Collection and Calculation Techniques and Problems*, U. S. Dept. of Labor Bulletin No. 1182, June 1955, p. 62.

<sup>5</sup> H. E. Riley, "The Price Indexes of the Bureau of Labor Statistics" in *The Relationship of Prices to Economic Stability and Growth*, (see note 1), p. 113.

A new policy for agricultural adjustment is urgently needed for many reasons. Output per man-hour has been rising more rapidly in agriculture than in the rest of the U. S. economy for at least twenty years. Because technological progress has made the large commercial farm relatively efficient and the small farm inefficient, 44 per cent of our farms now produce 91 per cent of the value of marketed farm produce.\* It is impossible to provide the remaining 56 per cent of the farmers with a satisfactory income by means of farm price supports, because they do not produce enough for sale. Present policies subsidize the affluent farmer while giving little help to the needy one. The game has continued to the point that the cost of supporting farm prices will be more than \$5 billions in the current fiscal year, federal payments will comprise about 40 per cent of net farm income, and the federal-held surplus will total about \$9 billions by mid-1959.

A rational agricultural program—as the CED and other objective students of the farm problem now agree—calls for gradual removal within definite time limits of farm price supports, acreage allotments and marketing controls. Such a program should embrace relocation and retraining grants to assist the submarginal farmer to enter more promising employment and should assure farmers a minimum income under adverse economic conditions. It must embrace a program to dispose of existing surpluses. A programmed return to free-market agricultural prices would remove a source of tension in our international relationships and diminish inflationary pressures. Even if a rational farm program cost the taxpayers as much as the present policy—which is most unlikely—the gains would be great.

## INTERNATIONAL TRADE

An essential element of an anti-inflationary policy is reduction of tariffs, import quotas and

other impediments to international trade. These help keep up domestic prices and shelter inefficiency and monopoly. A truly liberal international trade policy is the best safeguard of high productivity and a stable domestic price level in a world in which the leading trading nations seek monetary stability. The U. S. makes its economy strong by exposing its producers to fair (*i.e.*, unsubsidized) competition from abroad. If we expect to market our products in foreign countries, and ask them to expose their producers to our competition, we must be willing to receive their products.

The recent record of the United States in international trade policy has not been bad. We can applaud the renewal of the Reciprocal Trade Agreements Act. Yet there have been lapses from the path of virtue, in our tariff increases on watch movements and bicycles and our quotas on imports of Middle East and Canadian oil and Japanese textiles and apparel. There are now powerful reasons for more energetic action to remove trade restrictions. There is the ideological consideration that the U. S., as primary exponent of competitive capitalism, cannot preach competition at home and reject it from abroad. There is the national security consideration that the Free World is strengthened when its member nations are closely bound together in a network of trading and investing relationships. There is the economic growth consideration that the U. S. needs increasing amounts of foreign raw materials to feed its growing industrial machine and must find ever larger markets throughout the world in which to dispose of its products. These factors constitute a convincing case for a more liberal international trade policy, quite apart from the real contribution it would make to the stability of the dollar.

## STOCKPILING

Revision of federal programs of stockpiling defense materials would also contribute to the fight against inflation. Federal stockpiles of

\* Committee for Economic Development, *Toward A Realistic Farm Program* (New York: December 1957).

"strategic and critical materials" (in which copper, lead, zinc and platinum are important items) were valued at \$6.4 billions at June 30, 1958, and the government also owned \$3.3 billions of machine tools.<sup>7</sup> Most of these commodities were purchased when the concept prevailed that World War III would resemble World War II. In the light of present nuclear war potentialities, these huge stockpiles make little sense. There is a danger that "national security" may become a cloak for governmental price-supporting operations for many commodities, as has already been the case for lead and zinc. If so, additional elements of inflexibility in the price indexes would be created.

The U. S. has wisely refrained from participation in Western hemisphere price stabilization schemes on the ground that they violate our basic economic tenets, and fail in the end. Clearly, we should not operate domestic schemes of our own under any guise, especially when they contribute to inflation and impede economic readjustment.

### TAX REFORM

Reform of the federal tax system is an important part of any effort to increase the efficiency and structural flexibility of the U. S. economy and to make it less inflation-prone. In tax reform, the main emphasis should be upon measures that will offer both incentives and means of financing research and development and the modernization of our industrial machinery, and thus help to keep down costs and prices.

The immense cost-reducing potentialities of industrial modernization have been shown by a recent McGraw-Hill survey of American manufacturing industries. It was found that the cost of replacing all obsolete facilities with equipment of the most modern and efficient type would be \$95 billions—a sum equal to *all* of the expenditure on plant and equipment by

<sup>7</sup> *Annual Report of Office of Civil and Defense Mobilization*, submitted to the Joint Committee on Defense Production. Washington: Nov. 30, 1958.

American business (for additional capacity as well as modernization) during the three boom years 1955, 1956, and 1957.<sup>8</sup>

If we add to this "modernization backlog" the future capital requirements for *replacement*, in the light of an accelerating pace of technological change, plus the capital required for *additions* to our industrial plant to serve the needs of a population that may double within the next 50 years, U. S. capital requirements are astronomical. Yet they must be met if we are to retain our economic leadership in the face of rapid Sino-Soviet growth in production and influence. And we should not forget that other Free World nations have become formidable competitors in world markets. Some of them have *relatively* more post-World War II equipment than the U.S. possesses.

Americans would be wise to ask themselves how rapidly they wish their economy to grow, and then consider what kind of tax system will be consistent with this rate of growth. While the present federal tax system possesses valuable "built-in" counter-cyclical powers, as a result of its very heavy reliance upon progressive income taxes, it lays so heavy a burden on both the incentives and the ability to finance risky investment as to reduce the rate of capital formation, innovation, and economic growth.

The main lines of necessary federal tax reform are reasonably clear:

*First*, reduction of the top bracket personal income tax rates to realistic levels. The 91 per cent rate is really a "phantom" rate, paid by few and producing little revenue, while deterring productive effort and distorting investment.

*Second*, inauguration of a workable system of averaging personal incomes over periods of, say, five years. This would remove the penalty now imposed upon persons with unstable annual incomes (usually derived from entrepreneurial activities) in compari-

<sup>8</sup> "How and Why Industry Modernizes" *Business Week*, Sept. 27, 1958, p. 21.

son with those having stable incomes (usually from salaried employment).

*Third*, reduction of the rate on corporate income, now 52 per cent, which makes the federal government in effect, the majority stockholder of every business corporation of substantial size which favors wage inflation and inefficiency by charging the bulk of costs to the government, and which diminishes both the incentive to make and the means of financing new investment.

*Fourth*, modernization of depreciation laws to give business managers wider latitude to write off fixed assets and thus foster earlier replacement of obsolete facilities. Headway was made in this direction in the tax revisions of 1954 and 1958, but the basic U. S. rules continue to be illiberal in comparison with those of other industrialized countries.

These federal tax reforms would stimulate economic growth, help to reduce costs, and contribute to price-level stability. Our state and local tax systems should be reformed with the same purposes in view.

## COUNTER-CYCLICAL MONETARY AND FISCAL POLICIES

My discussion of measures to increase the structural flexibility of the U. S. economy has left me space enough to make only brief observations about increasing the effectiveness of monetary and fiscal measures.

The recent record of counter-cyclical monetary action is, I believe, fairly good;<sup>9</sup> that of fiscal policy is less favorable although the automatic stabilizers inherent in the federal tax system have been helpful. Stabilization policies could be improved in the future by more com-

plete knowledge of the time lags involved, by augmenting their potency and availability for use, and by better administrative coordination.

The economic stabilization process involves three kinds of time-lags: a lag between the emergence of a stabilization problem and its identification by policy-makers; a lag between problem identification and policy action; and a lag between governmental action and its corrective effect on the economy. The first two lags could be reduced by more accurate and promptly available economic statistics and by better economic analysis. The third kind of lag probably cannot be reduced in length, being inherent in the institutional structure of the economy, yet the timing of counter-cyclical actions could be improved if we knew its magnitude. Here is an urgent subject of research.

Increasing the potency and availability of counter-cyclical policy measures also requires reform of certain monetary and fiscal arrangements. It is likely, for example, that revisions of the legal reserve system for commercial banks and placement of non-bank financial institutions under some general monetary controls would be salutary. Such matters are now being examined by the Commission on Money and Credit. In the execution of fiscal policy a greater flexibility of tax rates is desirable. A delegation of Congressional power to the President to change personal tax liabilities within specific limits is one possibility. A system of automatic adjustments in personal income tax rates geared to changes in price or employment levels is another concept worth study.

Finally, we need better coordination of stabilization policies and actions within the Federal Executive, so that the monetary, taxation, expenditure, lending, and loan insuring operations of government reinforce each other. One means to this end would be the establishment of a National Economic Council under the chairmanship of the President, analogous to the National Security Council in the area of defense.

<sup>9</sup> This was the consensus of participants in an American Assembly meeting October 16-19, 1958. See *U. S. Monetary Policy* (New York: The American Assembly, 1959) pp. 116, 222. For a contrary view see Ascher Achinstein, *Federal Reserve Policy and Economic Stability, 1951-57*, A study prepared for the Committee on Banking and Currency. (Washington: U. S. Government Printing Office, 1958).

## ECONOMICS AND POLITICS

Creeping inflation can be stopped in a free and vigorously growing economy only by reforms in many fields of public policy. The political obstacles to these reforms are, indeed, formidable. Inflation raises the most difficult political problems because it pits the general interest in a dollar of stable buying power against many organized and articulate special interests. They include the "farm lobby" with a desire for high and rigid supports of farm prices; oil and mining interests with built-in profits from inflation, import quotas, and stock-piling programs; union officials with a desire for unbridled economic power; and business groups seeking protected markets to shelter their inefficiencies or reap monopoly profits. All of these groups must be educated to understand that their own welfare turns in the long run upon an efficient American economy competing in open markets and capable of flexible adaptation to change.

Let us suppose, however, that the political problems of restoring a greater measure of structural flexibility to the U. S. economy are not surmounted. What, then, is the next best line of public policy for dealing with the problem of gradual inflation? Should the nation continue to operate under an expansionary monetary-fiscal policy but turn to governmental regulation of wages and prices in order to suppress its consequences, as some persons have suggested? Or should a toughly restrictive monetary-fiscal policy be imposed in the hope of holding down the price level through the generation of unemployment?

On the assumption that present structural rigidities in the U. S. economy cannot or will not be reduced, the best course of action would be to accept the gradual inflation associated

with full employment and an expansionist monetary-fiscal policy, and to accommodate as many groups in society as possible to inflation through wider use of the escalation principle. In these circumstances, it would be desirable to minimize the inequities of inflation in a number of ways. Escalator clauses could be put in all wage and salary and pension contracts; governmental and private debtors might be required to repay their debts in dollar amounts having constant purchasing power; life insurance companies might be required (not merely permitted) to issue variable annuities. The escalation principle cannot be generalized to cover all citizens, as a practical matter. It carries grave risks of accelerating the inflationary process. And it multiplies the uncertainty of business transactions. Yet, it is clearly preferable to a network of direct price and wage controls which—history shows—only suppresses the evidence of inflation for a time, reduces economic efficiency, and spells the end of freedom.

Ability to solve the problem of creeping inflation within the framework of a free-market price system will be a supreme test of the economic wisdom of Americans and of the vitality of our political institutions. Will good economics prove to be good politics? American efforts to stabilize the dollar are being observed throughout the world, especially by people in nations yet wavering in their choice of economic development under freedom or under totalitarian control. We must not fail to pass the test. The United States must form a visible example to the world of an advanced industrial nation operated on the principles of economic freedom and financial probity. Here lies a great challenge to the American people, to the political leaders and to the economists of our time.

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ERNEST DALE

## Ernest Tener Weir: Iconoclast of Management<sup>1</sup>

*"There are some ways in which I might begin life with hardly any outlay, and yet begin with a good hope of getting on by resolution and exertion . . . and a head to plan."*

Charles Dickens, *David Copperfield*

Ernest Tener Weir looked up from the charts we had prepared to show the phenomenally successful growth of the National Steel Corporation under his carefully planned, if often drastic, cultivation. He took off his glasses and looked steadily across the table. "No, I don't think anyone could do it today. Not today."

It was ironic that the founder and president of the nation's fifth largest steel company should give pre-eminence to "the times" as a factor in his company's growth, for he achieved most of his success by being out of phase with the times. As a manager, Ernest Tener Weir was an innovator, ahead of his time in his emphasis on planning and in his organizing methods. As a steelman, he violated most of the major conventions of the industry

in his time. As a political being, he often fought against the mainstream of his contemporaries' thinking.

Weir first became nationally famous—in-famous to some—in the 1930's when he fought unionization more intransigently than his fellow industrialists. He defied government officials in the matter of a union election under the old National Recovery Act—and won his case when Section 7-A was declared unconstitutional. When President Roosevelt talked of "economic royalists," Weir picked up the phrase and announced that he was proud to be one.

Weir was not, however, entirely or even largely the arch-reactionary that some of his words and actions make him appear. For example, in 1932 he developed an analysis of the discrepancy between production and consumption that sounds remarkably like Thorstein Veblen's, though Weir had never read Veblen at the time (and probably not later)—

The only reason for production is consumption demand, and there must be a balance between them. If the producer expects his goods consumed, he must do his share in having the consumer's income on an equitable basis. If the producer's profit is excessive, it must be taken from the consumer, and slowly but

<sup>1</sup>The author had the privilege of working on this analysis with E. T. Weir on a number of occasions, discussing his life's thoughts and plans. E. T. Weir went over several versions of the draft of this paper. Many of Weir's personal papers and speeches were studied and drawn upon. A number of visits were made to Weirton. The charts were conceived and executed by R. S. Weinberg, Manager of Market Research of IBM. The author alone is responsible for the accuracy of the facts and their interpretation. A grant from the Social Science Research Council was used to cover travel and clerical expenses and the cost of the statistical studies.

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surely the power of consumption declines and production is not absorbed. Also the trouble is intensified by the producer from his excess share of earnings, using them to increase his plant and equipment, and his production. Thus there results a chasm between the requisites of prosperity—production and consumption—that eventually brings the collapse.

And these words, uttered in 1934, are hardly those of a reactionary: "If there had been some power which could have, by a stroke of the pen, taken some per cent from capital and given it to labor ten years ago, we might have had no depression. The over-expansion of industry would have been curtailed by this mythical reduction in the return to capital, and the purchasing power of wage earners would have been greater by reason of this increase to labor."

Moreover, to a large extent, Weir practiced what he preached. True, he went further than U. S. Steel in reducing wages after 1929, but in 1933 he notified the American Iron and Steel Institute that he was raising wages 15 per cent, and forced the rest of the industry to follow suit. "Steel manufacturers," he said, "are not justified in even considering any further liquidation of labor. We have gone, if anything, too far along those lines."

In 1935 he criticized other companies for raising wages, saying the increase was economically unwise, but in 1941 he again forced a rise in industry rates. U. S. Steel, the pace setter for the industry, had not yet settled its union contracts, but Weir knew that the projected profit statements from the industry would show ability to pay, and believed that haggling and delay were not justified. As the bickering went on, he told his associates: "It isn't enough—seven cents. When profit reports come later they'll make 'poor mouth' claims look ridiculous. And it will cost a lot of labor confidence." Then suddenly he stopped pacing up and down and called in his public relations man, John Ubinger: "You can put out the word that we are raising ten cents an hour—no need to elaborate. We've told our workers."

The announcement dropped like a bomb on

the bargaining table where Big Steel and the union leaders were arguing. In a few minutes their long disagreement was dissolved and all steel wages went up ten cents an hour. Weir said: "We felt ten cents the proper figure in view of the industry's earnings. We felt the men should share in that improvement."

Some time later, Weir opposed U. S. Steel's plan to hike prices, supported a wartime price freeze, and marched out of the American Iron and Steel Institute in token of his disagreement.

These contradictions have suggested to some observers that Weir might simply be an "old-fashioned 19th-century liberal" who believed that it would be possible to convince businessmen that it would be to their ultimate interest to pay higher wages and hold them to that course by moral suasion.

Certainly his basic philosophy was that of the liberal period in which he grew up, close to John Stuart Mill's principle of "framing the plan of our life so as to suit our character; of doing as we like, subject to such consequences as may follow; without impediment from our fellow-creatures so long as what we do does not harm them, even though they should think our conduct foolish, perverse and wrong." If he was harming his workers by fighting tooth and nail to keep the national unions out of his mills, Weir was not conscious of it, and he seems eventually to have won over the workers themselves to his point of view. (In 1950, when the NLRB held an election in his company, the independent union that had been organized in the meantime won hands down.)

All his life Weir drove his own way, though many of his fellow-creatures of varying shades of opinion thought his conduct foolish, perverse and wrong. In his fight against the unions he was clinging tenaciously to the past, but the ways in which he was ahead of his time are more significant. For it was by violating conservative traditions that he achieved his success.

And that success was quite extraordinary. In terms of size, National Steel is only fifth in

the industry, but in terms of profitability and growth it was first for a long time by a number of tests. The company even made a profit at a time during the Great Depression when every other steel company, including the giant United States Steel, was suffering a loss.

This profit picture was made possible not only by advances in sales that continued with remarkable steadiness, but by close control of costs, which were held strictly in line with sales. On the few occasions when sales dropped, costs were held absolutely in line. For example, when sales dropped more than \$50 million from 1937 to 1938, there was an almost equal drop in cost. Similarly when sales dipped after World War II in 1946, 1949, and 1954, there were correspondingly lower costs—in 1949, in fact, the decrease in costs was greater than the decrease in sales. This remarkable correspondence is indicated by Chart 1.

In addition, the company's annual steel ingot capacity rose more steeply than that of the industry, as is shown in Chart 2, which depicts capacity as a percentage of the industry capacity. The rise from less than 2.9 per cent in 1935 to almost 4.7 per cent in 1940 was particularly steep, and thus capacity added during a low-cost period could be taken full advantage of in World War II. The war itself led to a decline in percentage of industry capacity because the war restrictions were based on the 1935-39 average, which in National's case was 3.74 per cent.

Chart 3 shows the extraordinary control which "E. T." had during the 27 years of his chief executiveship at National. This is clearly evident from the principal strategic indicators of his company's development shown in Chart 3. Looking downward, major lines show the development of net sales; cumulated expenditure for new plant and equipment; annual ingot capacity; number of employees (index trend figures); expenditure for plant and equipment; gross fixed assets; and total assets. (A relates to Scale A; B to Scale B, etc.).

Now while there are some breaks in the upward trend of the lines, on the whole there is a remarkable upward consistency, even in the darkest years, in an industry subject to considerable fluctuations.

## YOUNG MAN WITH A PLAN

Basic in Weir's career were a lifetime plan and the goal of freedom of action, economic as well as political, social as well as personal. He never forgot his own experience of dependency. He never forgot the dependence of his father, a livery stablekeeper, on the whims of the wealthy who hired the horses. After his father's death, his mother and younger brother were dependent on his own meager earnings, which meant that he himself was dependent on his superiors. From his fear of dependency arose a desire for an integrated operation that would not remain in business "only at the sufferance of someone else."

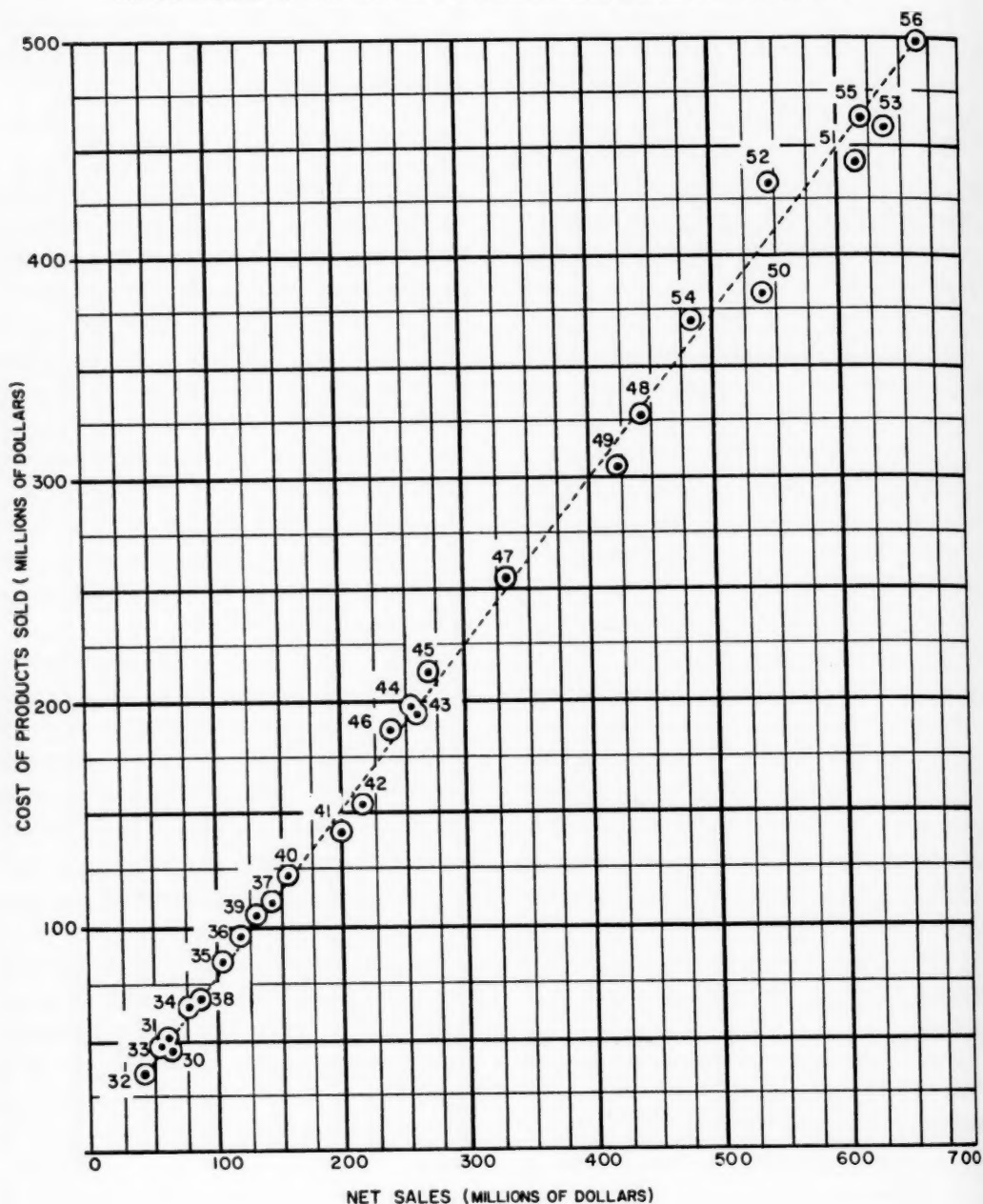
(Weir's opposition to unions seems to have stemmed from the same cause, more so than from the simple fear that unionization would cost him money. He gained no profit advantage from forcing the industry to raise wages more than it had planned on doing in 1941. Nothing would have been easier for him than to wait for the rest of the industry to settle and then meet the same terms.)

Weir was born in 1875, and began his business career in 1890 when his father died and he had to go to work to help support his mother and his younger brother. He started as an office boy at \$3 a week and worked 10 to 14 hours a day to make that much. According to his own account, the family was so poor at this time that once he was almost unable to get to work because he lacked a penny for the toll bridge he had to cross on the way. (As he was later to talk bankers into lending him money for his business ventures, he talked the tollkeeper into lending it to him.)

Weir remained with his first employer, the Braddock Wire Company, only two years.

CHART 1

NATIONAL STEEL CORPORATION COSTS OF PRODUCTS SOLD AND NET SALES, 1931-1956



When he was 17 he moved to a clerical job with the Oliver Wire Company and managed to progress rapidly, acquiring considerable experiences in several departments of the business during the seven years he remained there. In 1898, he left for the Monongahela Tin Plate

Company, which was sold shortly after to the American Tin Plate Company. By the time he was 25, he was an assistant manager. In this position his new superior was James R. Phillips, who, though he was a little older than Weir, became his friend and later his partner.

National Steel's Share of Total Industry Ingot and Steel Castings Capacity (Per cent)

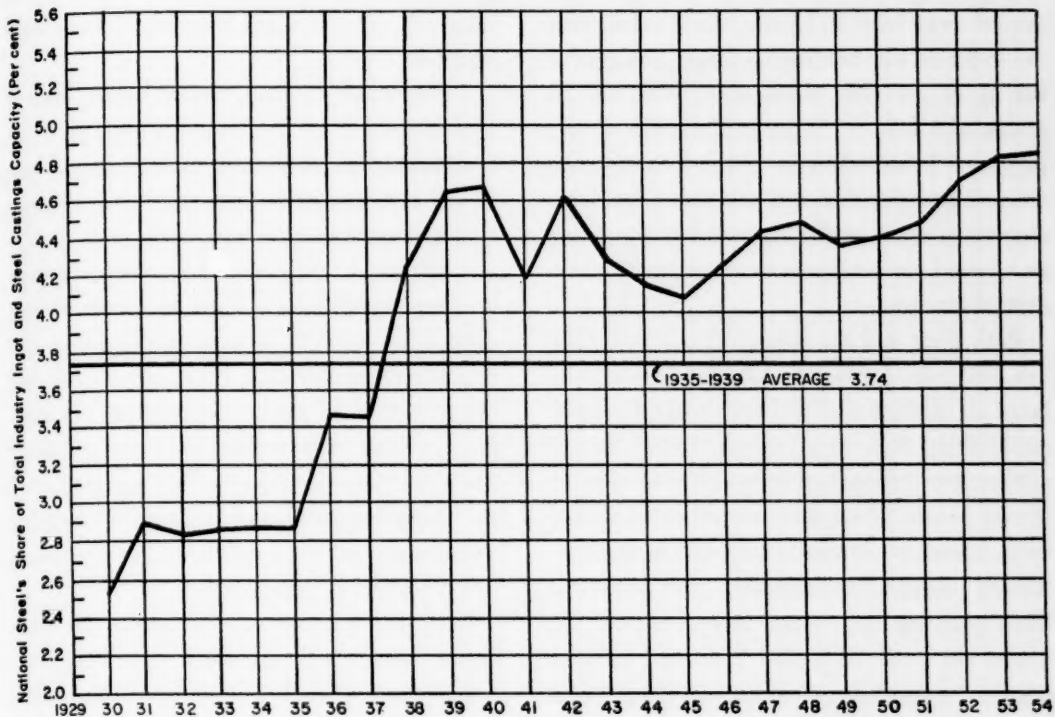
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CHART 2

NATIONAL STEEL CORPORATION SHARE OF TOTAL INDUSTRY INGOT AND STEEL CASTINGS CAPACITY  
1930-1954



In 1901 the United States Steel Corporation took over the American Tin Plate Company, but even in the disruption that generally attends such an event, Weir managed to land on his feet. In that same year he was placed in charge of the original Monongahela mill on the South side of Pittsburgh; and in 1903 he became manager of American's Monessen plant, largest in the Pittsburgh district.

The employee period of his life Weir regarded merely as a preparation. In preparation for his future career, he systematically acquired the necessary experience by studying various phases of the steel business and identifying the steps by which he would progress. He learned all he could about steel-making technology, established important connections, and made himself known as a young man of high promise.

Also, he checked regularly on the progress of his plans. Even as a boy of 15 at Braddock he had figured out that his company was mak-

ing enough wire each year to stretch a line to the moon—about 239,000 miles. He doubted there was need in the world for that much wire and told his mother, "I guess I'd better look for another job. There's no future in this one." But his mother could not afford to lose his weekly income and persuaded him to stay.

Ownership and independence were his ultimate goals, and in this he was entirely in conformity with the ideals of his time. Thus William Miller writes:

In that era young men, whether professionally trained or not, who had no prospect of inheriting a business and yet clung to salary jobs merited as little regard in the business community as spinsters of the same age did at home. Roles of a sort, of course, were prescribed for both spinsters and employees, but for the latter at least, these were likely still to be such as cramp the spirit and cloud over the blue sky of aspiration.<sup>2</sup>

<sup>2</sup> "The Business Elite in Business Bureaucracies" in *Men in Business: Essays in the History of Entrepreneurship*, edited by William Miller, (Cambridge, Mass: Harvard University Press, 1952).

It was in the methods he used to achieve these goals that Weir differed from the majority. The industry was concentrated in Pittsburgh; Weir moved away from it. During the thirties, when the industry was holding up prices and operating at 17 per cent of capacity, Weir cut his prices and kept up volume. He adopted new processes before the rest of the industry considered them feasible, and at a time when large companies were hardening into bureaucracies, he allowed his managers an unprecedented degree of freedom.

Both Weir and his boss at U. S. Steel, Phillips, felt they could have no real future in so large an organization and constantly discussed establishing their own company, even though neither one of them had been able to save much money as yet. "We felt we would do much better in a business in which we would have a substantial share of ownership." But with the trusts gobbling up as much control as possible, it was not until 1905 that Weir and Phillips heard of a small tin plate mill in Clarksburg, West Virginia, that could be bought at a comparatively low price, especially since its plant was poorly designed, had inefficient machinery and, as Weir described it, was "horribly congested."

That they themselves had not a tenth of the money needed did not bother them. Phillips was able to get one bank loan and Weir went to the Farmer's Bank and talked the president into lending him \$10,000 without any collateral, the stipulation being that his father-in-law, who had no collateral either, co-sign the note. Because of their reputations as up-and-coming young men, Weir and Phillips were also able to convince others, including the head of the Bank of Pittsburgh, the president of the Fidelity Trust Company and ten prominent Pittsburghers, each of whom had built his own business, that it would be profitable to put up money for the new firm.

The company had 250 employees and was capitalized at \$250,000, \$190,000 of which

went for the purchase of the plant. Phillips, who became president, died shortly afterwards in a railroad accident near Harrisburg, and the investing group elected Weir to fill the vacant position.

Though the company made money almost from the start, its position was insecure for a long time. Since it was too small to issue bonds or sell common stock, each step toward expansion was marked by a new bank loan.

As Weir put it: "We could have continued on a comfortable basis if we had been content with small operations and small profits. But that was never our idea. From our start, it was our intention to build a successful big company . . . Our backs were against the wall many times in those early days. We operated on a shoestring budget. Too many mistakes, one big mistake, or even some accident beyond our control could have broken us."

Early in his career at Clarksburg, one event beyond his control nearly did break him. Weir solved the problem in the characteristically original and slightly ruthless manner that befitted a classical entrepreneur.

Weir had constructed a dam in the West Fork River near the plant; and under ordinary circumstances it would have insured an adequate water supply for the plant processes. But in the summer and fall of 1908, an unprecedented drought hit West Virginia. No rain fell for months, and the water behind the dam sank dangerously low. The company used the same pickling solutions so many times that the packing on the pumps had to be replaced every day because it was eaten away by the acid. Weir got portable pumping equipment and started pumping out pools left upstream by the drying river, but as the drought dragged on, this source became more and more inadequate.

Finally, Weir cast his eyes on a reservoir commonly supposed to be owned by a nearby chemical company. Though it was pretty much of a forlorn hope, he took the trouble to investigate the title. He discovered that the chemical

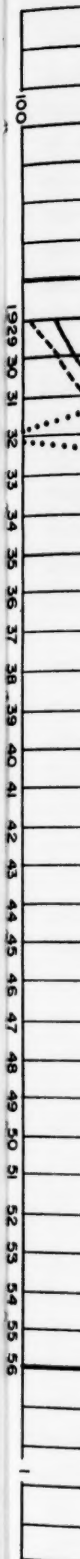
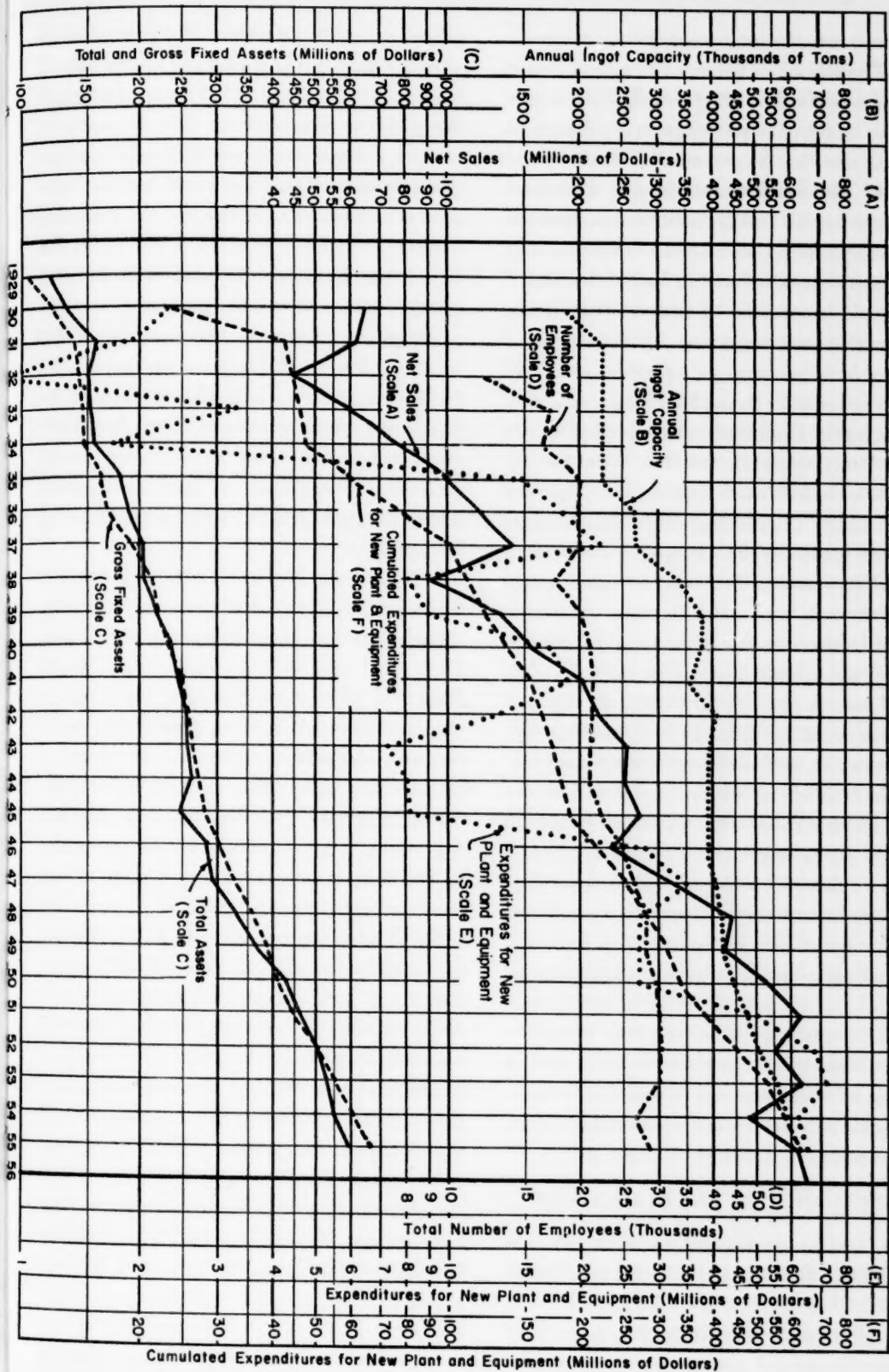


CHART 3  
NATIONAL STEEL'S LONG-TERM GROWTH, 1929-1956



company actually owned only half of the reservoir. The other half belonged to a local farmer who was perfectly willing to sell. Weir bought the half interest and started pumping that night.

Next morning he got a call from the president of the chemical company in Cleveland. Employees had hastily notified headquarters when they arrived on the scene in the morning.

"I'm just pumping out my half of the water," Weir said innocently. "I bought it yesterday. By the time you can get here, I'll have my half."

The chemical company president called his attorney, John W. Davis, later Democratic candidate for the Presidency, whose birthplace was Clarksburg. Davis agreed that Weir was entitled to his half of the water, but suggested that cooperation in finding other sources might be more profitable than fighting over the division of the scarcity. Weir was willing enough to settle on this basis, and the two companies joined forces to prospect for supplies. By surveying the country for miles around, they found enough pools to carry them through until the drought finally broke early in December.

Meanwhile, in the sales field, Weir was bucking U. S. Steel. Instead of trying to beat the giant corporation on its own terms, he sought gaps in its sales efforts. He used a different price and discount policy and stressed personal attention to customers, providing a good deal of it himself. Gradually he acquired a number of small customers and became their personal friend. Later on, a strike at U. S. Steel's competitive tinplate mills helped him to gain a larger foothold. From then on Weir took a leading role in selling, either personal or inspirational, following the Carnegie maxim: "Give me a market and I give you a mill."

## EXPANSION AND INTEGRATION

The first large expansion movement was planned as a means of protecting the independence of the company. Weir bought his sheet bar semi-finished steel from the U. S. Steel Corporation as did almost all the other inde-

pendent tinplate producers. But this principal supplier was also a competitor in the sale of tinplate, and he knew that the corporation had the power to put him out of business. So he went to Judge Gary, head of the Corporation and told him: "You can break me. You can close me out if you cut the price of plate and keep the price of sheet up or if you decide not to sell me sheet bar. I must know where I stand."

Judge Gary admitted that what Weir said was true. But as of that moment, he said, the Corporation had no idea of doing any of the things Weir had mentioned. Then he added: "I cannot give you any guarantee against it. As I say, young man, we haven't any such moves in mind now. But who knows about the future?"

Weir did not choose to remain in business "only by the sufferance of someone else," even though the worst never happened. (In the end, U. S. Steel tried to "join" rather than "fight" Weir and offered him the presidency and an annual salary of \$1 million, which he refused). To assure himself a supply of sheet, he had to be his own supplier "have a 'Little Steel' fashioned after 'Big Steel,' where you provided everything for yourself. For this reason we had to have an integrated steel operation from the very beginning."

So Weir borrowed another \$300,000 and, after careful consideration of alternatives, purchased 105 acres of apple orchard and wheat-fields at Crawford Crossing, West Virginia, and called it Weirton.

The choice of the new location, away from the obvious spot, Pittsburgh, is an example of Weir's unorthodox approach. In Pittsburgh he would not have had to build up an entirely new community from scratch and there would have been certain "external economies"—suppliers and legal, financial, and accounting services would have been readily available.

Weir did not choose the conventional way because "we had something else important in

mind besides building an integrated plant. We knew that our location would become the main location for our company. We were convinced that the principles and process on which we operated our business would make a basis of peace and harmony possible if we could establish our own environment. Naturally we could not do that in an existing industrial center. In such a center we would have to share the existing environment, including the attitudes, prejudices, and antagonisms that had built up during its entire previous history.

"In order to get harmony and goodwill we were entirely willing to undertake the double burden of building a new community at the same time as we were building our new plant and to undergo the growing pains that such a venture involved. And that is why Weirton did not come into being through accident . . . it was deliberately selected and consciously planned as the location for both a steel plant and a community."

In selecting this spot, Weir, who had no formal training in economics, could not have followed the dictates of the complex economic theory of location more closely if he had worked with a textbook in his hand. The site was close to coal resources, and the coal could be transported by river. Ore would also be transported cheaply, by water to the lower Great Lakes ports and then by rail transshipment. Heavy finished products could be delivered to customers along water routes at a relatively low cost as well as by rail. A "wind-fall revenue" could be obtained from some customers in the immediate vicinity of Weirton since, under the old basing-point system, they paid Pittsburgh prices plus the freight rate to Weirton, though this was counterbalanced to some extent by freight cost to customers east of Pittsburgh. The new site was also advantageously near markets—half the population of the United States was within a 500-mile radius.

There was adequate water supply; the plant location was free from the floods that threatened so many other sites; and, above all, there was plenty of room for expansion.

Weir built the first tinplate plant at the lower line of the valley but close to the hills. If it had been his intention to build a finishing plant alone, this move would have been uneconomical. It was logical only in terms of a fully integrated steel plant.

The first plant, costing about a million dollars and necessitating further loans, was in operation before the end of 1909 and consisted of ten mills. Another ten mills were added in 1910, twelve more in 1911 (through the purchase of the Pope Tin Plate Company of Steubenville, Ohio), four more in 1914, two in 1915. In a few years the company had fifty mills: twenty-six at Weirton, twelve at Steubenville and twelve at Clarksburg. It was the largest producer of tinplate in the country outside of U. S. Steel. The process of integration was furthered by World War I, which provided an opportunity to set up steel mills and blast furnaces, and in 1920 an up-to-date steel plant was completed. Prior to and during this time Weir purchased iron ore properties in the Great Lakes region and acquired coal lands in Pennsylvania and West Virginia. Weirton Steel then had more than 5,000 workers and sales of more than \$50 million annually. The growth of the company proceeded with remarkable steadiness over its first 20 years.

A real community to support and benefit the commercial venture was planned at the time Weirton property was purchased. Weir said many years later: "As we were walking over the vacant fields and looking over the land, if someone then could have opened a door to the future and made us see the panorama of mills, houses, churches, schools, stores and everything else that goes to make up the Weirton of today, naturally we would have been highly pleased—but I cannot say honestly that we would have been greatly surprised. Because

<sup>2</sup> "Some aspects of Our Personal History," speech given on February 24, 1955.

when we came here, it was already a settled matter that we would build a completely integrated steel plant and the community to support it."

The original community, called "The Cove," consisted of a few houses. Today Weirton has a population of 30,000, an area of 18 square miles, and 6,400 houses. The physical equipment of the city compares in quality and quantity with the best in the country.

Weir organized the town, as well as the company, according to his own ideas; much of the actual plan was conceived and carried out by Thomas Millsop, Weir's protégé and then president of Weirton Steel. There are only a few city employees; and the cost of running the city is said to be lower per head than that of any other city in the United States, and real estate taxes per head are among the lowest. Most services are contracted for on the basis of bids. All expenses—including postage—are published, so that the administration of all city affairs is indeed a "public" affair. Each householder undertook to pay for paving his part of the street and constructing part of sewers, and the city-notes financing the payments were largely paid off on presentation. Ninety-five per cent of Weirton's employed population own their own homes.

Some of the community's feelings may be indicated by the fact that the man who succeeded Weir as president of the company, Thomas E. Millsop, was elected and reelected mayor, though the town is heavily Democratic in national elections and he is a Republican.

By 1929 Weirton Steel was almost 25 years old, an established company and an extremely profitable one. And it was still closely held in undisputed control by those who founded it.

But it had one vulnerable point. Though Weir had acquired coal and ore holdings before Weirton was ten years old, the company was far from self-sufficient in raw material. Fifty per cent of the Superior ore reserves, which at that time supplied four-fifths of the

steel industry, were owned by U. S. Steel, and other large steel producers had bought up most of the remainder.

One of the few remaining independents was the M. A. Hanna Company, which possessed large reserves of ore, mostly in the Mesabi range. Under the competent direction of George M. Humphrey, later U. S. Secretary of the Treasury, who had helped to reorganize it in 1922, Hanna operated as an independent selling to independents, of whom Weir was one.

But there was a possibility that Weir might lose this source. Cyrus Eaton was then attempting to put together the country's second largest steel company, and it was not improbable that he, or someone else with the same idea, might come to dominate Weir's major independent source of supply. Weir decided that his investment would be better protected if he were "Mr. Humphrey's partner rather than Mr. Humphrey's customer." Humphrey, sensing the difficult years ahead, preferred assured markets to the insecurity of independence.

Weir was also anxious to expand his steel production facilities. Dependence on a single product (tinplate) seemed too dangerous. And he foresaw that the great markets of the future would be the Middle West in general and the automobile industry in particular. So he directed his attention to the Great Lakes Steel Corporation, at Ecorse, a suburb of Detroit.

Great Lakes Steel was itself something of a maverick in the industry. At that time the steel industry had an inhibition about construction in the Detroit area. To open a plant there was something that "just wasn't done." The company was the brain-child of George R. Fink, who had sold sheet steel to the automobile industry and had good connections with it. Though a large steel company was said to have offered him a good position if he would desist from opening a plant near the big auto companies, he went ahead on a small scale. Then by 1929 he had done so well that he decided

to expand, and selected a site on the Detroit River for a larger plant. Although he was able to raise \$20 million, he needed more new capital and this he could get from Weirton while still preserving the company's identity, which might have been lost had he merged it with a larger concern. In becoming a part of the more diversified enterprise, he became less completely dependent on the automobile industry, and the ore resources and nearby blast furnaces of M. A. Hanna assured him of supplies and saved further heavy investments.

Agreement on the merger was reached just before the stock market crash in 1929, and the accord was formally ratified just after the break. Weir got a 50 per cent interest in the newly formed company, which was named the National Steel Corporation, and became its chief executive and chairman of the board. Fink got a 25 per cent interest and became president, and Humphrey got the remaining 25 per cent and became a member of National's Board and chairman of its executive committee. The M. A. Hanna Co. did not itself go into the merger. Instead, it maintained its identity as an affiliated company and contributed the ore, the Detroit blast furnaces, and the freighters.

Weir brought in not only Humphrey's assets, but also one of the country's best business brains. As chairman of its executive committee, Humphrey took a prominent part in the Company's affairs from the very beginning of his association with it. He became Chairman of the Board in 1957 after leaving his post as Secretary of the Treasury in order to smooth the changes caused by Weir's death that year. One of Humphrey's important planning contributions was his exploration of related investments and discovery of aggressive managements which he very successfully combined with M. A. Hanna's investments, such as the Pittsburgh Consolidated Coal Company and the Iron Ore Company of Canada.

There was no new equity financing in the consolidation, no "water," and no promoter's

profits. Weir asked banks for a promissory note of \$40 million ("it was like asking for the National Debt at that time") and got it with no collateral other than his promise to repay and to issue bonds later as conditions might warrant.

## INGREDIENTS OF SUCCESS

Born at the outset of the Great Depression, National Steel might have been expected to collapse almost immediately; from Hanna, Weir got no advantages competitors did not already have, and Great Lakes was handicapped by the worst automobile depression in the history of the industry. Instead, National Steel produced at 62 per cent of capacity while competitors were down to 25 per cent and below. In 1932 Weir made a profit while the rest of the industry was losing money. In 1933 he made a greater profit than all the rest of the industry. How was this possible?

1. National Steel's finishing capacity was considerably in excess of its furnace capacity. Hence it could adapt production to falling demand by the inexpensive method of shutting down a strip mill rather than by the costly process of shutting down a blast furnace.

2. Great Lakes Steel could supply large quantities of steel at low selling and transportation expense; even small quantities could be sold at a profit and supplied in a hurry. "This 'grocery store' business did not make anyone rich but it kept Fink from becoming poor."

3. The world had to continue to eat, and much of the food it needed had to be conserved in tin.

4. Finally, the techniques of production were highly efficient and, though it was unostentatious and largely unpublicized, National's management was one of the most competent in America.

Technical innovations included the four-high continuous mill—Weir acquired the patents and built the mills in 1927 before anyone else in the steel industry had introduced the

process, though he had to borrow \$7 million to finance the construction. This converted a job that had taken a whole day into a three-minute operation. He was also one of the pioneers in another revolutionary technical advance, the electrolytic tinning of steel, building an experimental line in 1938 and going into production in March-May 1943. In World War II his second-in-command, Thomas Mill-sop, undertook to roll brass on large steel equipment—a feat never before attempted and for technical reasons considered impossible. In a month's time, Weirton became the country's largest producer of rolled brass and was responsible for breaking a procurement bottleneck. Later the company devised methods of rolling magnesium sheets. In the production of an essential atomic bomb material, Weirton solved problems that producers in other fields had refused even to tackle.

In the field of organization, Weir built a logical structure from the very first, observing—though he had never heard of them—some of the classical rules of organization: short spans of control, unity of command, and authority commensurate with responsibility.

Though he was never much concerned with organization charts and manuals, and in fact operated for a long time without even a chart, he early laid out the broad outlines of the principal jobs, dividing the work logically so that the profitability of the various functions could be gauged.

At the very first, he did transgress the rule that authority should be delegated along with responsibility, but because—unlike many business geniuses—he permitted subordinates to disagree with him, he corrected this fault at the instance of one of the salesmen he hired when he found that he could no longer handle both the sales function and the job of chief executive.

Moreover, he introduced some ideas that organization planners in other companies

began to approach cautiously only in very recent times; for example, he delegated both responsibility and authority as far down the line as possible with control exercised through profit and loss statements rather than through rules regarding set ways of doing things.

From an engineering viewpoint, the individual mill was of optimum size for management; similarly the optimum unit in marketing was a group of customers for certain specialties or a particular territory. In each case, the "middle manager," who was managing a unit just about large enough for one man to comprehend all the details, was charged with the basic decision-making and stood or fell on results.

Weir went much further in this than do many companies that believe they have "decentralized decision-making" today. A superintendent of a nearby company once commented: "I have never been able to understand why we do not have financial authority commensurate with responsibility. I have friends at a competitive company (Weirton) and I know that when they write a good order, they get what they need. They don't have to sit around writing justifications and explain why they need it to everybody. They are responsible people holding responsible jobs and they know it is up to them to make a good showing cost-wise, and everybody knows that they don't order things unless they are absolutely needed. But when they say they want it, they get it immediately. A general superintendent (in our company) can make a mistake that will cost the company half a million dollars, yet he cannot authorize the purchase of a \$5,000 tractor."

And middle management did not hesitate to insist on its prerogatives. One new higher-echelon executive who persisted in checking too closely on a lesser member of the management team was frankly told: "This is not the way we do things here. I am not a flunky. If you want to know how I'm doing, take a look at the

profit and loss statement." The underling not only got away with it but also won his point and was free from further interference.

Weir's strong belief in maximum freedom of operation for all managers, including foremen, is one explanation for his stubborn refusal to recognize international unions. He thereby avoided their severe restrictions on work assignment and change of assignments and so increased his supervisors' powers to meet company goals.

Moreover, Weir did not allow the staff men to proliferate as they have often done in other companies. Headquarters staff was kept small, and staff work was supplied where it was most needed, in the field helping with day-to-day problems. Staff men were flexible and could be easily and quickly shifted to new assignments. Central activities were confined to financing, purchasing, and coordinated control.

Since Weir delegated so much real authority, he had time to keep up personal contacts with his executives and through his own leadership imbue them with the company policies that had meant success: first-class personal service to all customers, punctuality (telegrams, even from overseas, were answered within a half-hour of receipt and the answers were equivalent to contracts), acceptable or more than acceptable prices, *etc.*

Putting together the resources of Hanna, Great Lakes, and Weirton was perhaps the most important of his organization feats. It fitted perfectly into the natural tendencies and development of the steel industry.

Weir thought little of formal management training and appraisal forms. The very real delegation of authority and responsibility, combined with the full exercise of accountability, he believed, provides enough training and affords the logical means of appraisal through results.

In this, and in his view that the top manager needs considerable knowledge of all the techni-

cal specialties (a training he systematically acquired in his employee days), Weir may appear to have been lagging behind the times. Actually, he may have been ahead of them. The view that management is a "skill in itself" which exists independently of technological knowledge may have been somewhat overdone in recent years. Perhaps it has led to overdependence on certain types of staffs and consequently to growth in overhead. Undoubtedly, technical skill—in metallurgy, or sales for example—may exist without the ability to plan and coordinate that is the essence of the management job. But the man who plans and coordinates, no matter how logically, is at a distinct disadvantage if he has no real knowledge of the things he is planning and coordinating.

Weir knew production, he knew financing, and he knew sales and sales problems; in fact, he continued personal selling to some extent almost to the end of his life.

Since Weir was a substantial stockholder himself, he placed prime emphasis on the best use of his and other stockholders' investment. The principal method of control was through a profit and loss system for the main organization units (Weirton, Great Lakes, *etc.*) and through regular examination of controllable sales costs for the units that were not so large. Much of the detailed control was exercised by the small "management company," which occupied only half a floor in Pittsburgh's Grant building and contained few but extremely able minds in general management, law and finance. Finally, banks played an important part in his controls. Weir was continuously in debt and as soon as one loan was paid off, he entered upon an even larger one: "We've always been in debt and I hope we always will be. It keeps us working harder." Surplus was kept in inventories and fixed assets. "A big cash balance is a terrible thing. It encourages the idea that the company is rich."

It must be noted also that there were important elements of luck in Weir's success. He got into the tinplate business (where food canning made for a stable or rising demand) more or less by accident. He was raised to the presidency of his new company by the premature death of Phillips. And he was enabled to gather in new customers by a strike against his competitors in tinplate. Later, his company grew with the rising demand for steel from the automobile companies.

But subtracting these nonrepetitive factors, the other ingredients of Weir's success may be instructive.

### PERSONAL QUALIFICATIONS FOR SUCCESS

The achievement of Weir's plan was, of course, a highly complex affair, and an outside analyst can, at best, trace only some of the elements.

First among the elements were his own personal qualifications, consisting partly of traits often characteristic of other great founders and organizers, but to some extent underplayed in the selection and development of higher executives today.

- *Weir had a highly logical mind.* He clearly recognized the basic and essential aspects in the business situations that confronted him and organized to meet them. His selection of the site at Clarksburg and the fitting together of the logical combination of National Steel were two examples. Another was his successful move in keeping up volume by cutting prices during the Great Depression.

- *Weir had an innovating disposition and the ability to face risk.* He was an innovator in all phases of the business, not only in technical advances but in the location of his plant away from the steel centers, and in building his own community from scratch. He never "played it safe" by waiting to see what the rest of the industry would do. Instead, he obtained new bank loans and went ahead.

- *He had an absolute will to succeed, and few and uncomplicated goals.* He sought only business success in the 19th-century tradition in which he grew up and complete independence.

- *Weir possessed great technical knowledge.* In his employee period, he systematically acquired knowledge of as many phases of the business as possible, including the technical advances. For this reason he was on surer ground in introducing his innovations than he would have been if he had had to depend entirely on the advice of others, however competent.

- *Weir's physical energy was prodigious.* In his younger days he could work around the clock for several days together, or drive himself steadily for months at a time. Even in his old age he would sometimes have appointments all day in one city, fly home, and then have a long dinner conference on an urgent issue.

- *His words and deeds were consistent with each other.* Although Weir possessed in great measure the ability to make friends and deal diplomatically with others (when he thought it necessary) and to impress others (notably hard-headed bankers) with his own competence,—he was not "cooperative" in the usual business sense today—that is, he was not a compromiser willing to water down his views to make them more acceptable, to impress others, or to avoid offending.

One strange quirk in Weir's nature was an extraordinary devotion to the book, *David Copperfield*. He once said he had read it a hundred times and would continue to re-read it. He kept a copy at each of his five homes, and a supply to give away. Did he see in Copperfield's early hardships a parallel with his own early life? Was he warned by the example of Micawber against shiftlessness? Or was there a streak of 19th-century sentimentality in him that was warmed by Dickens' occasional mawkishness? Or did Dickens provide him with an escape from the everyday material world?

It is impossible to say. But this strange love for a single book seems to be one way in which he differed from the classic type of entrepreneur—the single-minded innovator and risk taker, who concentrates almost entirely on business. His other choices of reading matter were very wide. He preferred the lasting to the ephemeral: books on world affairs, biographies and history, though he also read detective stories. He read extremely fast and had an extraordinarily retentive memory.

### MECHANICS OF SUCCESS

The methods Weir utilized in achieving his success may be summed up under a few headings:

- *A lifetime plan.* Once Weir decided to quit United States Steel, he clearly established the goal of building one of the largest integrated steel companies in the country. The Clarksburg tinplate mill was a stopgap to contribute the necessary funds. He deliberately planned the location of Weirton to make possible an integrated company.

In making, disseminating, and checking on his plans, Weir did not use forms, charts, high-powered machines and pyrotechnical presentations so dear to the organization man. He focused his mind on the basic questions separating the primary from the secondary, or "details," as he put it. He would draw on his experience and memory, his travels and personal visits and interviews, and use one or at most a few outstanding fact finders. In this way he would assemble something like 85 per cent of the facts obtainable and apply his penetrating analysis to the essentials, conceive the plan, tell his associates about it and follow it up himself.

- *Flexibility.* Though Weir held tenaciously to his basic objective, he was unusually flexible in the ways in which he sought his ends. Consistency was not a trait he sought to display. He would change his policy violently if he could thereby serve the end, as when he

changed his pricing drastically at the outset of the Great Depression, and reverted from bulk selling to hand-to-mouth peddling during the great automobile slump. He also rapidly reversed his wage policies when economic conditions changed or when an increase became necessary to insure that no international union gained a foothold in his mills.

His internal company organization was highly flexible. It was motivated by high rewards, emphasis on the survival of the fittest, and a degree of independence for subordinate managers unusual in industry. He placed no emphasis on formal organization, or formal development of individuals. (The latter omission may have been somewhat unwise since at one point the company hastily had to hire executives from other steel companies.)

- *Conformity in objectives, non-conformity in reaching them.* Weir always accepted the basic values of the society in which he grew up. His main objective was frankly the accumulation of wealth, plus independence and freedom to maneuver. He was unorthodox only in his methods of reaching his goals, and that probably because no orthodox ways were open to him.

The fact that he was willing to act differently from competition was his chief strength. If everyone had cut prices when he did, there would hardly have been a larger volume for all. But because he was willing to run away from the crowd, he profited. Similarly, because no one else had thought to move steel mills away from Pittsburgh, he gained advantages of location. He utilized "the power of being a positive stinker," by doing things that were distinctly "not done" in the industry.

- *Ruthless execution of plans.* Weir's long-range goal was broken down into annual rates of increase in what he considered to be the major measures of growth. Assets, investment in plant and equipment were to grow by more or less steady increments regardless of general steel contractions. And expenses for wages and

salaries and maintenance were not to get out of line. Through "responsibility accounting" he held each executive rigidly accountable for results both quantitatively and qualitatively. He enforced a Draconian adherence to his plans, even in the depths of depression, on himself as well as on his associates. Financing through bank loans, he said, "keeps us working harder."

• *Personal inspection and hard work.* Though he allowed his executives more freedom than other top managers often do, he did not separate himself entirely from the details of the business. He kept in touch by frequent telephone calls and visits to the various locations. And to avoid corruption from success, Weir turned away by quoting Einstein: "The only way to escape personal corruption of praise is to go on working. One is tempted to stop and listen to it. The only thing is to turn away and go on working. Work. There is nothing else."

• *An egalitarian top structure.* Weir was deeply conscious of the need for a small oligarchy that could discuss all matters freely. He paid salaries equal to his to the top men, believing they made equal contributions to the company, and preferred to have a group of outstanding top men rather than the biddable nonentities many of the corporate founders surround themselves with.

If much of Weir's later non-conformity turned into rebellion, it may in fact be explained by his clinging to the value structure and goals of his youth when those of his society, and increasingly those of many of his competitors, were changing. As Weir was fond of saying, "There was much that was good in the good old days." It was this that brought Weir into conflict with the New Deal, and many of his business friends (e.g., U. S. Steel and later Ford, after the latter's recognition of CIO unions and the grant of the union shop). Not even Walter Teagle, late president of Standard Oil Company of New Jersey was able to ease his continued disagreement with the labor

boards of the Roosevelt administration (Hugh Johnson threatened to jail him and his interviews with FDR were mostly cat and mouse games).

When Weir had won his battles in a formal way, he became less negative regarding the changing value structure of his time and turned to what might be called constructive non-conformity in the last part of his life. During World War II he fully cooperated in the American war effort, even to the extent of undertaking some seemingly impossible jobs—for example, the rolling of brass on large steel equipment.

### THE LATER YEARS

After World War II Weir became convinced that complete refusal to accept the changing values of his society was fruitless and frustrating. Consequently, he actively tried to help shape the values and to persuade others to do the same and to support their beliefs by political action. His basic belief in freedom of economic opportunity and freedom of action did not change appreciably. He still attempted to reduce the scope of governmental intervention. But here—unlike the large majority of businessmen—he attempted to strike at the heart of the government's base for intervention: namely, what he considered to be the excessive amount of international tension and armament. If it could be reduced, then a greater area of freedom for economic and political action would be assured. It was the negative action by governments all over the world that he tried to counter by being positive.

Weir liked to quote Lord Attlee's observation on how to make progress on big, seemingly unresolvable issues: "When the logs are jammed in the river, one must begin by extricating one or two, in the hope that thereby the whole mess might move." And beyond that Weir felt—again unlike many businessmen—that he and his confreres should participate in

politics to help legislate a type of government intervention which provides for opportunity or at least does not hinder it.

Toward this end, he wrote annually several papers and speeches, reviving the art of pamphleteering and carrying it to a high level of effectiveness. The Weir tracts were requested by hundreds of thousands of write-ins to the company, even though there was hardly any newspaper or other publicity. As involved in what he considered to be the big international

issues as he was in his own affairs, he attempted to be supremely rational in an irrational world. Writing with persuasiveness and forcefulness, he anticipated Ambassador Kennan and Senator Fulbright by almost a decade in his proposals which were designed to halt rising military budgets and the abysmal decline of professional diplomacy, to promote rising living standards and the good life. To this Weir devoted the last ten years of his life. It was the one issue he had not resolved at his death.

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*The fundamental qualities for good execution of a plan are, first, naturally, intelligence; then discernment and judgment, which enable one to recognize the best methods to attain it; then singleness of purpose; and, lastly, what is most essential of all, will—stubborn will.*

Marshal Foch

WILLIAM E. HILL

# Planning for Profits: A Four-Stage Method

*A description of techniques of long-range planning for both large and small firms.*

This article is a report on some current practices in long-range profit planning and on some of the benefits of charting a company's future growth to 1963, and even to 1968 and 1978. Of course, the techniques of long-range profit planning are subject to still greater refinement for optimum effectiveness. Nonetheless, a number of companies have successfully prepared and implemented long-range profit planning, and it is useful to describe their practices.

The business readjustment of 1958 accelerated an already growing use of long-range planning by American management. An outgrowth of this increased emphasis on forward planning as a means of augmenting the growth rate of *present* sources of earnings is the search for *new* contributions to the size, growth, and stability of future corporate profits.

Long-range planning is no fleeting interest of management; it is a major trend of the times, a trend underwritten by many new forces and developments. In a recent issue of *Nation's Business*, it was stated, "Management authorities say more than 50 per cent of today's businesses have some kind of long-range planning. Five years ago the figure was scarcely 20 per cent."<sup>1</sup>

Note the emphasis on "some kind of long-

<sup>1</sup> "Plan Tomorrow's Profits," *Nation's Business*, August, 1958, p. 29.

range planning." Not all companies yet have formal and comprehensive forward planning activities, but the number of programs is increasing. And their comprehensiveness is expanding to include all functions of a business.

Major oil companies are among the leaders of the trend to more long-range planning. For some time oil exploration and production have been planned ahead (because of the problem of insuring adequate crude oil supply), but oil companies now plan for all functions of the business at least five years ahead. And, believe it or not, even certain management consulting firms (the exponents of planning) have their own long-range programs. The increasing costs of market and product development in electronics and other technologically-new areas make long-range profit planning in these industries particularly necessary. Very practical results are being achieved today in five-to-twenty-year planning of electronics, instrumentation, chemicals, paper, and other fields with heavy research and development and with high market development costs.

## FORCES UNDERLYING THE TREND TO LONG-RANGE PLANNING

The opportunities provided by long-range planning are, of course, considerable. In addition to these opportunities, however, are cer-

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tain strong external pressures which all but force management to plan ahead.

Four strong external pressures, in particular, affect the present source of earnings of many companies and thus encourage management to give increased attention to long-range planning. And it might be added that these forces may be even more significant to companies searching for entirely new sources of corporate profits:

1. *Squeeze on profits.* The return on net worth (stockholders' investment) for all manufacturing companies has been declining. Pretax return on investment has dropped from 27 per cent in 1947 to 21 per cent in 1957. Similarly, of 22 major manufacturing industry groups, only four showed an increase in pretax return on investment in the post-war period. The remaining 18 industries saw returns decline as much as 32 per cent. The squeeze has been essentially on profit on sales, not on capital turnover (the ratio of sales to capital investment).

2. *Changing end-use markets.* Numerous changes in the living habits and tastes of the consumer have necessitated major changes in marketing programs. The population's shift to the suburbs has affected distribution systems. Increased labor costs have brought about the do-it-yourself trend, which in turn has created a large market for numerous new products. Other sociological changes have been the increased number of older people in our population, over-all population growth, and the shifting differences in income groups. Many other changes are taking place which will create new requirements that must be met by management in the future.

3. *New technologies and product obsolescence.* Research is playing an increasingly important part in the development of new products. Many of these products have come into being only after many years of research. To realize a desired product mix five or ten years hence, it is necessary to plan now the direction

research efforts should take. Planned research and development not only provides new product development but also keeps present products competitive through constant product improvement.

4. *Integration in industry and competitive structures.* Integration and diversification are constantly changing the competitive picture. The vertical integration of manufacturing operations back toward raw material sources or forward into end-use products creates additional competitive forces. Vertical integration in pharmaceuticals and chemicals is one form of change in historical structure. Certain phases of the petroleum industry underwent vertical integration many years ago. Currently, vertical integration is necessary for success in certain parts of the paper industry, such as corrugated shipping containers.

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In addition to these external pressures, which more or less force long-range planning for survival, are several significant advantages for the internal structure of the firm. Among them are the following:

1. *Stockholders.* A sound forward plan outlining directions of growth for increased profits strengthens management position with both present and new stockholders. Undesirable raiding of companies has been prevented in a number of cases by defining corporate plans to present stockholders.

2. *Directors.* Management can use effective long-range planning in establishing criteria for directors (particularly outside directors) to review and evaluate the progress of operations in a long-term sense, thereby encouraging realistic judgment on the part of board members.

3. *Management.* Specific goals can be listed and achieved for the future development of a company. These goals can be set up divisionally and for the total company. Both general

management and middle management will know what these objectives are and what performance is required of them.

4. *Personnel motivations.* Because long-range planning stresses future development and growth, the existence of a practical corporate plan can contribute to greatly enhance morale among personnel at all levels of the company organization. Such a plan also helps to attract and hold capable management personnel, assists in labor relations and in community relations.

These pressures and opportunities have led management to realize more and more the importance for long-range planning. Ralph J. Cordiner, Board Chairman of General Electric, has summed this up in the following statement:

Very few substantial businesses today can expect to survive and grow without a dynamic plan for continuous innovation in products, processes, facilities, methods, organization, leadership and all other aspects of the business. These innovations require early major investment in projects which may not reach commercial maturity for 10 years or longer.

## TYPES OF FORWARD PLANNING

There are two distinct types of forward planning. The first is divisional or product group planning and the second is total corporate planning. An increasing number of companies are engaged in five-year planning of the first type, but relatively few make the distinction between the two types or recognize the importance of the more comprehensive corporate planning.

Divisional planning is essentially an extension of planned budgeting of the operations of present products, from one year to as many as five years ahead. It relies heavily on the development of the most accurate possible profit and sales forecasting of present product lines to which standard budget techniques can be applied. It includes planning of additions and eliminations of products, processes, market applications, etc., to present product lines. It

also presumes an increasing development of marketing strategy that is end-use market focused and employs market analysis as the basis for the direction of product planning, merchandising, field sales operations, sales administration, service, etc.

Thus, divisional planning can establish five-year requirements for operations of the divisions or product groups in the areas of marketing, organization, capital, R&D, facilities, etc. Usually, five-year divisional plans are revised annually. The Chain Belt Company is among those companies using divisional planning. At this company, all the various elements of the divisional five-year plan are assembled in a 15-page summary, which serves as a running guide to management. "Probably, the greatest value in this sort of approach," says Arthur J. Frank, the company's planning manager, "is the discipline we put ourselves through in conducting a formalized exercise like this." Management is in agreement that the "discipline" is for optimum profit generation.

"The question of future organization requirements was dramatized in a rather interesting manner at the divisional managers' review of our first formalized plan," says L. B. McKnight, Executive Committee Chairman of Chain Belt. "Every division manager keenly felt and expressed the future need for sales engineers, design engineers, supervisors, and other managerial personnel. 'If this is where we're going,' one of them said, 'where are we going to get the men to sell and engineer and manage all this?' Then and there, we decided that the next spring Chain Belt would seek to hire the largest class of college graduates for the student training program that we had ever had. When spring rolled around we did just that."

In contrast to divisional planning, the sec-

<sup>3</sup> "Forecasting to Assist In Formulation of Sound Long Range Plans," speech given before the National Industrial Conference Board, New York City, September, 1957.

<sup>4</sup> "Long-Range Company Planning at Chain Belt," speech given before the National Industrial Conference Board, Dallas, March 1958.

<sup>2</sup> Ralph J. Cordiner, *New Frontiers for Professional Managers* (New York: McGraw Hill Book Company, 1956), p. 87.

ond type of forward profit planning embraces the entire corporation as a single entity. Total corporate planning is usually for five to ten years, but many companies are effectively planning twenty years ahead.

Total corporate profit planning is initiated for the purpose of "stabilized earnings at a higher level." Such planning, therefore, requires that profit, sales, and capital objectives to give stockholders the best possible return on investment be formulated. If present products cannot meet these objectives, then new activities or changes in present operations are in order. Thus, the extent to which additional or changed operations are necessary is defined.

Development of the total corporate growth pattern is the second major planning requirement. Practically every company can improve its position by taking advantage of opportunities for growth which fully exploit its particular strengths and resources and changes in its economic environment. Because of the sweeping changes taking place in almost every industry, stronger emphasis must be placed on achieving and maintaining a stronger profit position than ever before. A corporate pattern of evolution along directions suited to a company's unique characteristics and to changes in the general economic structure is essential to its best profit position.

Once the profit objectives and pattern of growth have been defined, planning of specific new products can be undertaken. This is the third requirement for total corporate planning.

The fourth constituent of total corporate planning follows from the other three: programming for the major functions of the business. Such comprehensive planning can effectively determine new organization, capital, research and development, facilities, market development, and other requirements for the whole corporation.

These concepts are being applied by forward-thinking managements of companies of all sizes.

## STEPS IN PREPARING A LONG-RANGE PROGRAM

Many companies subscribe to the advantages of long-range planning but find it difficult to plan well. The techniques of comprehensive long-range planning are relatively new, at least in practice. Although there are many new methodological techniques, the basic theory and framework for comprehensive long-range planning was laid down by Henri Fayol a long time ago in his *General and Industrial Management* (London: Sir Isaac Pitman & Sons, Ltd., 1949), translated from the French, which first appeared in 1916. Every effort is being made by the management of some companies, by management associations and schools, and by certain management consulting firms to make these practices more widely known. It is for this purpose that these ideas are being published here.

Table 1 outlines the four phases of preparing a long-range plan. The steps outlined in Table 1 can be applied, with some modifications, to both divisional and corporate planning. It should be emphasized that the sequence of the four phases as outlined is important. Too many companies attempt to seek new products and to estimate capital or manpower requirements (as in Phases III and IV), without first defining the specifications that are the result of Phase I—Profit Planning, and the result of Phase II—Proprietary Directions for Corporate Growth.

### Phase I—Determining Corporate Profit Objectives

Since profit is the *raison d'être* of any company, the question is often asked as to what measures or yardsticks of performance should be used. Over half of the chief executive officers recently surveyed by *Forbes Magazine* named return on investment "the most symptomatic indicator" of management effectiveness.

Profit objectives should not be stated solely

in terms of profit on sales. Return on investment and growth in earnings are probably the most crucial quantitative profit standards a company can have. Profit on sales by itself is not an adequate profit objective because, for example, a food chain with only 2 per cent

profit on sales can actually be more profitable to its shareholders than a utility with 15 per cent profit on sales. Sales growth is another important criterion, but only because sales growth is usually necessary for earnings growth.

How many companies have actually worked

TABLE 1  
FOUR STAGES IN LONG-RANGE PROFIT PLANNING

*Phase I—Corporate Profit Objectives.*

- Analysis of record of operations.
- Establishment of standards for future profits.
- Projection of present operations.
- Measurement of extent of need for new products.
- *Preparation of 5 and 10-year corporate objectives of sales, profits, capital requirements for present and new products.*

*Phase II—Proprietary Directions for Corporate Growth*

- Audit of corporate skills, resources and limitations.
- Position of company in its total industry structure.
- Changing end-use markets, technologies and competitive integration, affecting industry structure and company position.
- Alternative directions for company evolution and growth.
- *Selection of most proprietary directions to maintain and optimize profits.*

*Phase III—Planning New Products.*

- Selection of product fields to fulfill corporate objectives of Phase I within selected directions of Phase II.
- Determination of approach to new fields—by acquisition, internal research, joint ventures, etc.
- Programming of specific product lines.
- *Scheduling of realization of new products in relation to financial and management feasibility.*

*Phase IV—Programming Requirements of Business Functions.*

- *Marketing*—Focusing market development plans and programming (products, merchandising, pricing, field sales, etc.) on consumer requirements.
- *Organization*—Scheduling, recruitment and development of manpower requirements (management, other personnel) to staff long-range program.
- *R&D*—Relating research and development to divisional and corporate present product maintenance and new product realization.
- *Manufacturing*—Scheduling further development of present and new plants and low-cost equipment programs.
- *Financial*—Budgeting of capital requirements and development of financial resources.
- *Planning of Other Requirements.*

out and submitted to their directors five- or ten-year projections for size, growth, and stability of future profits in terms of earnings per share, return on investment, and other quantitatively-measured key operating figures? More and more have, but still most companies do not. Such a projection serves as one of the key steps in establishing corporate profit objectives.

As indicated on Table 1, the result of profit planning should be the preparation of five- and ten-year corporate objectives of sales, profits, and capital requirements for existing operations and for new product fields. Four steps culminate in the preparation of these objectives:

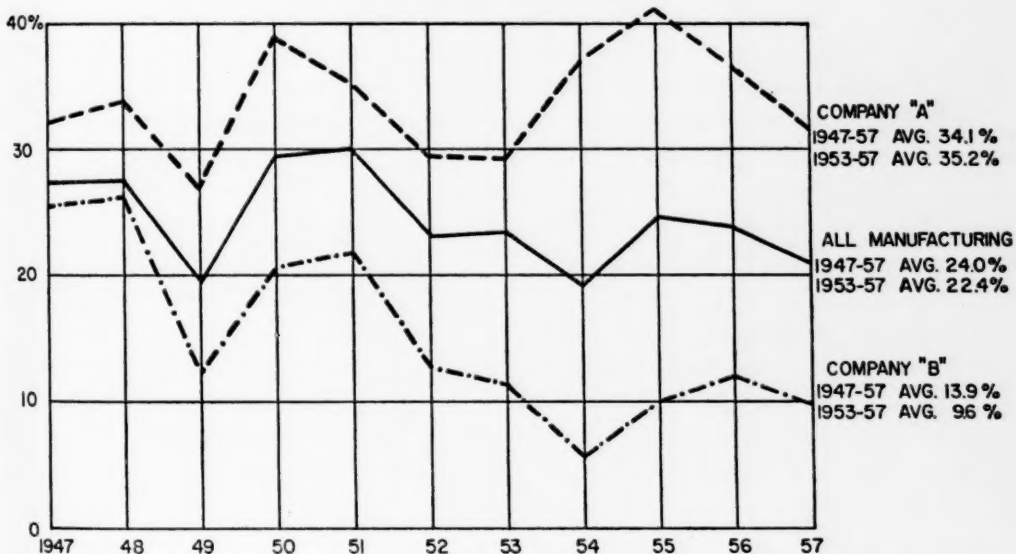
1. The first step in establishing corporate profit objectives is the analysis of the company's or the division's record of operations to date with respect to profitability, growth, and other yardsticks versus those of competitors and the total industry. Chart 1 shows, for illustrative purposes, the return on investment for two companies in comparison with the record of all manufacturing companies.

Other measures of performance are growth of sales, profits, cash flow, and equity; earnings per share; and cash flow as a per cent of stockholders' equity.

2. Setting standards for future accomplishment is the second step in profit planning. These standards or goals will vary by industry and by company. In Chart 1, Company A has the problem of maintaining its attractive profit record. This could be its standard for the future. Company B's standards should be at least to raise its return to the average of all manufacturing.

A similar comparison should be made with the average of the company's industry. In many instances, the industry average will be an important factor in setting goals. But even this can be elusive. A building products manufacturer would have difficulty determining the "industry average" because the operating ratios of companies in the industry vary too widely to give meaning to an "average." This wide variation is attributable to the fact that included in the building pro-

CHART 1  
PRETAX RETURN ON INVESTMENT



ducts industry are several individual businesses such as glass, lumber, paint, and plumbing and heating equipment.

3. The third step in profit planning is a five-year, or possibly a ten-year projection of sales and profits and the resultant investment at expanded levels of present operations. This is a normal result of effective market analysis. Projections can be made in light of the opportunities and threats facing present businesses.

4. The measurement of the extent of the need for new products (the difference between the standards of future corporate profits established in step 1 and the projections of present products in step 3) is the fourth step.

Combining steps 3 and 4 provides a schedule of five- and ten-year corporate objectives of sales, profits, and capital requirements for present and new products. Naturally, the financial resources of a company may determine the feasibility of the objectives. Financial limitations would naturally extend the period of realization of profit objectives, but should not change the concept of future profit requirements.

Profit planning results in a guide to management decision-making on both present and new products, for it provides a quantitative criterion for the size and extent of a new products program. Whether a new products program is to be \$1 million, or \$10 million, or \$100 million in sales volume makes a tremendous difference in the management of new product activities.

Profit planning of present products may uncover a need for new or enlarged markets to bring certain existing product lines up to future profit standards. Alternatively management may decide to "spin-off" an existing product or division—as International Business Machines recently did when it sold its Time Equipment Division. Thomas J. Watson, Jr., President, made the following statement:

Although the time equipment business has been a part of IBM since its beginning, this division in recent years has accounted for less than 3 per cent of our gross revenues. The evolution of our products

has resulted in our time equipment becoming less and less compatible with our other operations. Under these circumstances, and after thorough analysis by IBM management, we concluded that the interests of the IBM company, its employees, stockholders and customers, could best be served if we concentrated wholly on those product divisions which are making the greatest contributions to IBM's operations.<sup>5</sup>

## Phase II—Establishing Proprietary Directions for Corporate Growth

Most companies have a natural growth pattern for their future development. The problem is to identify the most "proprietary" directions—those that can supply the most advantageous profit opportunities, that will exploit the underlying growth forces in the economy. This is not an easy task. In many cases development along the most proprietary directions may be integration or specialization rather than diversification. In other cases, expansion into completely diverse lines may be required.

"When we explored and analyzed what we thought would be the future markets in electronics, one that seemed attractive to us was the business machines market," says Charles B. Thornton, President of Litton Industries. "Business machines are, after all, figuring machines or computers. While it is true that it is cheaper to make electromechanical calculating machines today than electronic computers, we are certain that in the future, the heart of the computational business will be electronic."<sup>6</sup> In Litton's case, entry into the calculating machine business provided a "proprietary" opportunity.

Another company, Crompton & Knowles Corporation of Worcester, is applying its textile machinery know-how to the packaging machinery field and is capitalizing on its long-term position in the textile market by engaging in

<sup>5</sup> Letter to IBM Stockholders, October 24, 1958.

<sup>6</sup> "Building a Company in a Growth Industry," speech given at Los Angeles, January 1958.

specialty textile chemicals manufacturing. Both directions, selected by President F. W. Howe of Crompton & Knowles, were to advance company profits for shareholders.

Selecting the best proprietary directions for corporate growth follows from the process outlined below:

1. The first step in establishing proprietary directions for corporate growth is an audit of corporate skills and limitations. The application of specialized techniques usually discloses the major strengths on which a company has been built. The philosophy and character of the management team; the degree of unified purpose expressed by management; and the relative strength of the business functions (particularly the first two), marketing, research and development, manufacturing, finance, and organization are some of the significant resources. These factors are all important in determining the areas in which the company can most readily achieve a proprietary position. For instance, a management team oriented to retail merchandising is not likely to prosper by manufacturing gas turbines. This example is obviously extreme to illustrate a point. In reality the differences are for more subtle, but still very important.
2. The second step in determining the pattern of corporate growth is to structure the total industry complex in which a company operates—its direct and indirect competitors at all vertical and horizontal levels, the end-use markets served and the technologies employed. As an example, the total paper and allied products industry consists of many individual paper-based business segments with distinctive markets and competition. And today, a paper company may be vertically integrating into packaging. It may be necessary, for example, to sell boxes to make a profit on board mills. The total complex should be considered in this planning process.

3. Once the total industry and competitive structure is established, it is possible to indicate the changes taking place that affect a company's decision on the most proprietary position to seek for the future. The requirements to realize this position in relation to the audit of existing skills and resources will also be apparent.

Three areas of change are particularly significant for selecting a pattern of growth: always changing end-use market requirements within segments of the industry, technological changes, which make for rapid obsolescence and increased scientific activity in business, and competitive integration moves within the industry structure. These steps may indicate several alternative directions for consideration. Evolution may be possible within the industry by vertical or horizontal integration. On the other hand, certain companies may find they must diversify to achieve desirable corporate goals. Companies considering integration and diversification efforts should establish the prospective return on investment before entering a new field.

The final step is, of course, evaluating and comparing the alternative directions for growth uncovered by this process and selecting the pattern most propitious for stabilized profits at the highest level.

### Phase III—Planning New Products

Establishing the proprietary directions for corporate growth makes it comparatively easy to select and develop new product lines either by internal research or company acquisition. The selection of product lines should provide an opportunity not only to capitalize on growth forces, but to capture new markets and to participate in new technologies.

Apparently, Mr. Thornton of Litton, quoted above, supports this concept, as he continues,

With this kind of reasoning behind us, we took a subjective look at the Monroe Calculating Machine Company. It had an excellent name. It was seeking the proficiency in advanced computer techniques that we had already developed. At the same time, Monroe had a keen appreciation of the requirements for bringing these new techniques to the market—with a world-wide marketing organization consisting of more than 350 company owned sales and service branches in the United States and abroad. There were other reasons that brought us together, to be sure, but the ones I have reviewed constituted the basic motivation behind our Monroe acquisition.<sup>7</sup>

The four principal steps in Phase III are as follows:

1. Selection of product lines to fulfill corporate objectives of Phase I within selected directions of Phase II. The selection of the most desirable product to manufacture may be a problem of a company that has decided to broaden its product base within an industry.
2. Determination of approach to new fields—by acquisition, internal research, or joint ventures, for example. Often, companies use a combination of all the available means.
3. Programming of specific product lines and the approach to entry in the selected fields.
4. Scheduling of realization of new products in relation to financial and management feasibility.

The practices employed in these steps are fairly well established today in the commercial development activities of a number of companies. For example, one company, as a result of the sound planning of new products, will realize its 1961 sales objectives in 1959. The addition of new products through development and acquisition is presently under way as the result of proprietary directions established during 1956 as in Phase II. Setting these directions led to the selection of three product fields as in Phase III.

#### Phase IV—Programming Future Requirements of the Principal Business Functions

Here again it is much easier to program comprehensively the functions of a business when

Phases I-III are well planned. The five most important functions subject to programming in Phase IV are shown in Table I.

Let us take planning for the research function as an example, recognizing that there are two types of research—research for existing products, and research for new products. The direction of research on existing products should, of course, be pointed to those product groups which show the greatest profit potential, as determined in Phase I.

New products activities can develop from the proprietary directions for corporate growth indicated by Phase II. Suppose a company is a manufacturer of food board, the little white cardboard packages that frozen peas come in. Analysis of the market and competitive trends here indicates that there could be a number of technological threats to this business, say from medium-density polyethylene. A little more investigation may disclose a need for an extensive research activity for polyethylene application in this market to hold the market position in the face of a technological threat to the product.

Some forward-looking companies, in the chemical industries for example, find that in order to operate successfully in their business, they must earmark about 15 per cent of their research funds to basic or so-called “learning” research—with no particular plan of payoff or return on investment. In the fibre business, for example, a company might be studying polymerization and what makes those long molecules—simply to understand the mechanism of the linkages involved. Such research may result in nothing practical, or result in a very practical idea subject to applied research in a rather unexpected product area. Or it may lead to a major breakthrough in the industry. Nylon is one result of just this kind of “learning-research.” Chemical companies have successfully conducted learning-research for many years, and now companies in other fields are beginning to follow their lead. Management’s

<sup>7</sup> See note 6.

decisions in this area are fundamental to the long-term effectiveness of the company's research function.

There are also examples of long-range organization planning. The basic issue in organization planning is whether the organization is suited to the future requirements of the business. The importance of this issue is illustrated by the experience of one company in the materials handling field which had gradually developed its way into a lighter product than its principal historical business. The lighter product really represented a different business altogether with different markets, different engineering, different manufacturing, and different selling techniques. Both businesses had attractive profit prospects, but this company was hardly to get started in the second business. It is now splitting itself up into two divisions—really two separate organizations with decentralized operating responsibility, each with personnel of the particular caliber and qualifications to handle the different requirements of each business.

## ORGANIZING AND IMPLEMENTING

Long-range planning is a full-time job. Although it is a major responsibility of general management, it is most effective when a central staff planning and development activity is formally established within the company to undertake the specialized practices involved. There are several reasons for this.

Some managers are inherently planners, others are not. Since most operating men have such heavy responsibility for current operations that it is difficult for them to find the time to plan, they need planning assistance. This is true at top management as well as divisional and departmental levels. The creation of a central staff planning unit has solved the problem of starting and continuing long-range planning in many companies.

A central planning staff is likely to be most effective also because planning must be com-

pany-wide. A central staff can coordinate its efforts with those of divisions, product groups, and such functional departments as research and finance. With such coordination the line and the staff managers can employ themselves in their own longer-range planning.

Moreover, the central planning unit is most effective when reporting to the chief executive officer or his deputy. In many cases, no more than one competent man is necessary to initiate the planning and development activity. It is important, however, to formalize the functions and responsibilities of this position for the most desirable internal relations and effective results from long-range planning.

It is helpful to keep in mind certain other considerations which make the planning activity easier to implement. Simplicity is vital to effective initiation of long-range planning. Many companies have been set back in their planning by trying to do too much too soon. Even five-year projections of sales and profits of present products can be a major first-year achievement in some companies, with requirements such as future manpower, and new products to come later. Another key consideration is that formalized (written) long-range plans seem to be the only effective ones.

Also important is the need to regularly update a five-year plan, at least annually. Some twenty-year plans are not annually updated, but then in these cases five-year planning is often considered short-range. The so-called DuPont chart system and its variations can be integrated with long-range planning as a control to measure performance. This consists of a series of charts—usually brought up to date for quarterly or monthly review—which compares the operating units and the total company on the factors making up return on investment. In whatever form, a periodic measure of return on investment (and forecasts and objectives for return on investment) can be most effective in getting the planning process off of "top dead center."

## RESUMÉ

To recapitulate briefly, then, the trend to more long-range planning is here to stay. The pressures of the economy demand it and the opportunities it uncovers for stabilizing profits at high levels make it eminently attractive—both at divisional and at corporation levels. Of course, the techniques of long-range planning are subject to still greater refinement, but many

companies have been and are using most successfully the techniques outlined in this article. Whatever refinements may be forthcoming, it is likely that the four basic steps described in detail here will continue to provide a workable framework for long-range profit planning: setting profit objectives, determining the directions for growth, selecting new products, and comprehensively programming functions.

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*Even though its existence is seldom recognized, the company personality has an important bearing on the company's fate—perhaps more important because its influence is so rarely recognized. In large measure, this personality consists of a body of traditions and assumptions about the nature of the business that are rarely questioned—and rarely even put into words. It therefore tends to contain the company's blind spots as well as its unsuspected assets. Like an individual without insight, a company whose personality is left unexamined will be likely to keep acting out the same predetermined role, unable to react flexibly to changing conditions.*

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PAUL PRASOW

## Reducing the Risks of Labor Arbitration

*Management often ignores with peril some important considerations in deciding to arbitrate. A noted arbitrator advises management on these issues.*

One of the basic issues which management faces in the administration of the grievance procedure of the collective bargaining agreement is the decision whether a particular employee grievance should be arbitrated or settled by negotiation.

Although most employee grievances are settled in the first, second, or third steps of the grievance machinery, there are some instances in which all the steps are exhausted—and still an impasse exists. It is at this point that the question must be faced: should management resolve the grievance, seeking the best settlement possible under the circumstances; or should management go to arbitration, convinced as it is of the soundness of its position.

To the arbitrator, it sometimes seems that management decides to arbitrate without a sufficient regard for the risks involved, and with little or no consideration for some of the most important factors which must be weighed before the decision is made. Typically, management decides to arbitrate when these conditions have been met:

1. Management officials have made a thorough study of the original statement of the grievance and have reviewed its history through every step of the procedure.

2. They have evaluated the facts, the pertinent contract provisions, as well as any relevant past practices; and they sincerely believe that their position is sound.
3. They have explored the matter with the union, stating clearly and in detail the reasons for denying the grievance. However, the union is not convinced and serves notice that if the grievance is not settled, it will definitely carry the matter to arbitration.

It is a basic principle of sound personnel administration to treat employee grievances on their own merits without resort to the pressures and tactics often desirable in contract negotiations. In other words, sound personnel policy requires that grievances be treated in this manner, removed as much as possible from the conflict conditions which often prevail in contract negotiations. But, often, careful attention to all these factors alone does not provide management with a sound basis for deciding to arbitrate.

Accordingly, what additional factors must be evaluated before making the decision to undergo the rigors of arbitration? To management the outcome often seems clear; there is only one decision the arbitrator can make, and

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that is to sustain the company's position. But, as some company officials have learned ruefully, there is no absolute certainty about the outcome of any arbitration, no matter how impregnable they might believe their positions to be.

### RISKS OF ARBITRATION

In this decision-making process, management cannot set as its criterion absolute certainty of outcome. Too many important intangibles make the situation inherently unpredictable. The human fallibility of the parties themselves is the first of these intangibles. Objectivity in problems of human relations is not easily attained. This difficulty exists for arbitrators as well, despite their necessary pose of infallibility. All people have their blind spots and with some the blinder the spot, the less aware they are of its existence. Also, the unexpected and the unforeseen, such as a surprise witness, must be reckoned with as an additional hazard in going to arbitration, no matter how strong one's position may be.

Not only is it impossible to eliminate an element of risk in the undertaking, but there is no practical gauge for knowing when the degree of risk has been reduced to its irreducible minimum. Nevertheless, the parties welcome all the enlightenment available which will take some of the guesswork out of the decision they have to make. All too often do companies proceed with a burden of unnecessary risks which should have been screened out before making the decision to arbitrate.

One of the risks in going to arbitration is that the decision and opinion of the arbitrator may encompass a great deal more than the ostensible issue as set forth in the submission agreement. For example, in the case of a manufacturing company of approximately 200 employees, the problem of inventory taking arose for the first time. The company decided to have the inventory taken by bargaining unit employees on a weekend. Management notified 42

out of approximately 175 bargaining unit employees to report for work on certain days to take the inventory. In making the assignment the company disregarded the seniority provisions of the collective bargaining agreement. When two employees, whose names were high on the seniority list, were not called to perform this inventory work, they promptly filed a grievance claiming their seniority rights had been violated.

The employer argued that inventory work was outside the scope of the agreement, and, therefore, the seniority provisions did not apply. The company pointed out that the contract was limited to "production and maintenance work." However, arguments to the effect that the contract did not cover inventory work proved futile, and the union insisted upon taking the case to arbitration. The issue as submitted to the arbitrator was phrased as follows: "Did the Company violate the seniority provisions of the Agreement by failing to provide work on August 5, and 6, for employees X and Y?"

During the hearing it soon became obvious that neither party was fully aware that they were going to arbitrate anything beyond the seniority rights of a few people. As the hearing progressed, the parties began to realize, perhaps too late, that in order for the arbitrator to make a determination on the seniority rights of the employees, he had to answer the much more fundamental question as to whether or not inventory work came within the scope of the collective bargaining agreement. If they had realized that this was the actual issue, it is very doubtful that they would have carried the matter to arbitration at all.

Another important consideration is the matter of arbitration costs. Most companies and unions find that arbitration is becoming increasingly more expensive. The arbitrator's fee, although substantial, may be the least expensive item in the over-all amount involved. Attorney's fees and cost of the transcript usu-

ally far exceed the arbitrator's charge. Then there are the hidden costs: the loss of productive time because employee witnesses are pulled off the job, the time consuming interviews with supervisors and their attendance for days at the arbitration hearing, and innumerable other inconveniences which add substantially to the costs of the undertaking. If the issue is important enough to be considered for arbitration, it is the essence of wisdom to undergo every necessary expense for adequate preparation and presentation. Cases which should have been won on their intrinsic merits are often lost because of false economy in preparing a position. (On occasion, an adverse arbitration award may seriously damage the prestige of management in the eyes of employees.)

At this point it may be desirable to trace the origin of the grievance. The employer's right to manage the plant safely and efficiently is an accepted principle of industrial relations. The responsibility to manage carries with it the authority to make day-to-day decisions to effectuate this objective. Except in those matters which are restricted or prohibited by contract or law, management may act without consulting the union. The union, of course, has the right to grieve and appeal when it believes that the actions of management infringe on contractual and statutory rights of employees.

The traditional procedure is for management to establish an employee status without resorting to the grievance procedure. The union is placed in the position of the moving party, trying to set aside or modify such management determinations as, for example, those involved in promoting, transferring, laying off, disciplining or discharging employees. Therefore, the filing of grievances by employees instead of by management is the normal incident of industrial relations. This procedure tests management's position and can uncover sources of more serious difficulty at a later time. The processing of a grievance allows for a full and fair opportunity of investigation and

review. Management recognizes that the prompt and equitable adjustment of grievances on merit alone promotes harmonious employee-employer relations. A certain number of grievances, however, eventually reach the end point of the grievance machinery and management is faced with the necessity of justifying its action to a neutral third party.

Any discussion on the risks of arbitration would not be complete without some mention of the hazards involved in *not* seeking a definitive ruling on a disputed contract interpretation. Sometimes a reluctance to arbitrate may result in an informal concession on an issue which may plague the company when it is compelled to arbitrate the same question as it affects other employees.

The best protection against future difficulty is to secure a clear and mutual understanding that an informal settlement on an issue does not constitute a precedent in a future case. Otherwise, the claim could be made that the company waived its rights on the issue and is bound to follow the same action in all subsequent cases so long as the same contract is in effect. Or an arbitrator may hold in some later situation that a particular ambiguous provision must be interpreted in the light of "past practice." Although this aspect is beyond the scope of the present article, it should be noted that the failure to arbitrate a basic issue may result in setting undesirable precedents or weakening plant discipline.

#### SIGNIFICANCE OF OTHER AWARDS

In deciding whether to go to arbitration, management would be well advised to follow some of the same steps that an arbitrator takes in deciding an issue. Management should, for example, find out how arbitrators have ruled on the particular issue and on related issues in other cases. There has been much pro and con discussion regarding 'the use and abuse of published arbitration awards. Experienced labor relations' representatives would regard it as a

disservice to their clients if they failed to read as many published arbitration awards as can be found on the subject matter in dispute.

While arbitrators are not bound to follow the awards of other arbitrators, even on the same issue, it is common practice for them to examine these awards. Such examination serves a number of purposes. First, the arbitrator is interested in the criteria used by other arbitrators to determine the matter in dispute. Secondly, the reasoning and opinions of experienced, reputable arbitrators with high professional standards can provide valuable insights into the nature of the problem and ways of resolving it. The reasoning and opinions contained in these published awards have not been arrived at casually or superficially. They are the product of careful research, intensive study, and analysis. They can benefit not only the arbitrator, but the contending parties. To the arbitrator these opinions can be a check or test of his own thinking and are sometimes most persuasive in crystalizing his own conclusions.

Even though an arbitrator may disagree with the awards and conclusions of other arbitrators on the same or related issues, he will nonetheless find the awards to be of substantial benefit in enabling him to grasp the essential nature of a complex problem in all of its ramifications.

It may be useful at this point to describe in some detail how arbitrators and experienced advocates of the parties review the available arbitration data on the issues in dispute. Take the case of an employee who has been discharged for absenteeism. He is a production worker in the open hearth of a steel mill. The reason for his absenteeism is that he was arrested for assault and battery in a tavern and given a 10-day jail sentence. The particular altercation occurred off company property and outside of working hours. The agreement between the company and union contains two sentences pertinent to the situation. The first is specific and states that "Absence without

just cause may be a basis for termination." The second sentence is general and provides that "The employer may discipline or discharge employees for just cause."

In that part of the American labor force covered by collective bargaining agreements, it is quite probable that similar incidents have occurred, particularly in heavy industry. First, the arbitrator may turn to the master index of arbitration awards which is published by the Bureau of National Affairs, Inc., and which is presently in two volumes, plus a supplement. Each volume is entitled *Labor Arbitration Cumulative Digest*. These volumes summarize and index thousands of published arbitration awards. The main index contains twelve general topics. The pertinent heading for the illustration case comes under the general title of "Working Conditions: Wages, Hours, Job Rights." Under this heading there are fourteen sections. The pertinent section, numbered 118, is entitled "Discharge, Discipline, and Plant Rules." The arbitrator turns now to a detailed breakdown of section 118 which contains numerous sub-headings, one of which is entitled "Absence from work; absenteeism, page 642." On page 642 and succeeding pages of the *Labor Arbitration Cumulative Digest*, the arbitrator finds a short and concise summary of numerous cases involving the question of absenteeism. He scans the summaries to ascertain if there has been a previous award on the same or similar issue as the one submitted to him. Sure enough, on the second page of this sub-heading he finds the following pertinent summary:

Discharge of employee who was to be absent from work for an extended period of time as a result of a jail sentence was for proper cause. Contentions that discharge was not justified because (1) employee's conviction did not affect the employment relationship, and (2) contract contains no provision making a jail sentence a proper ground for discharge are rejected; discharge was not for reason that employee was convicted but rather because he was to be absent for an extended period without a justifiable reason and as such was for proper cause—Jenkins Bros., 12. LA 759.

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tained in thirty bound volumes entitled *Labor Arbitration Reports*. The citation to volume 12 and page 759 makes it quite simple to refer to the complete text of the award and opinion and to note criteria and how the arbitrator has applied them to the facts and circumstances of his particular case. Returning to the index, the arbitrator looks for other similar cases and on another page he finds the following:

Employee who was dropped from payroll as 'constructive quit' after his failure to report for scheduled work was improperly denied reinstatement when he made application for his old job five months later, where employee's absence was due to fact that he was being held in jail as material witness to a crime and in connection with another court action.—National Tube Co., 12. LA 975.

Having satisfied himself that this second citation also treats of a similar or related situation, he refers again to the full text in the appropriate volume. Continuing this process, he finds a total of 10 cases dealing with discharges of absenteeism where incarceration in a penal institution is the reason for absenteeism. While no two cases are completely identical, the arbitrator is constantly on guard to look for similar and related as well as different characteristics.

I concur heartily with the following comments of Professor Jules Justin, a prominent New York arbitrator, on the "precedent value" of published arbitration awards. He believes that such value of arbitrators' decisions lies in the persuasive force which they exert and which compels consideration. As he notes:

Prior awards which enunciate just and reasonable principles of conduct and contract interpretation command respect from an arbitrator, as they do from the parties themselves. The considered judgment of one arbitrator cannot be lightly dismissed or ignored. When fortified by others such judgment warrants acceptance. Though not controlling or authoritative, these judgments and principles exercise significant weight with another arbitrator. It is in this sense that prior decisions have value as precedents. Regarded in this light, reported awards can be made to serve both management and unions in the preparation and proof of the arbitration case. (21 LRR 94 Jules J. Justin, "Arbitration: Precedent Value of Reported Awards")

The Company can use this information for two purposes: (1) to help assess the risks involved in going to arbitration; and (2) to provide ammunition, if and when the matter is actually presented to an arbitrator. It is obvious that if the prior arbitrators have all ruled in favor of management on this point, not only is management's position strengthened immeasurably, but its risks are reduced accordingly. On the other hand, if the arbitrators have all ruled to reverse management's decision on the discharge, then the Company might well re-examine its position. If the arbitrators are divided in their rulings, this information, too, can be useful. More often than not a majority of the arbitrators have ruled one way, and a minority another way. In such an eventuality, the facts and circumstances of each situation could be analyzed in terms of their relevance to the current grievance and its disposition.

### THE COMPREHENSIVE VIEW

Another step which should be taken by management before making a decision to arbitrate is to study the case from the adversary's point of view. Not only must the Company be prepared to present its own evidence and argument, but it must be prepared to answer the evidence and argument from the opposing side. Chess playing furnishes an appropriate analogy. A good chess player always plays two games simultaneously, his own, and his opponent's. He not only figures out his own best move, but he also tries to estimate what the best move of his opponent could be and to meet it, if necessary.

A classic illustration of an employer anticipating the best move of the union and checking it, occurred in an arbitration that was won hands down by the company in the submission agreement, even before the case went to a hearing. The situation involved a dispute over the demotions of two employees to lower classifications. The management succeeded in getting an agreement from the union to have the ques-

tion worded as follows: "Was the Company's action in not retaining John Doe and Richard Roe in the positions they occupied on March 5, 1958, in violation of the Agreement?"

As it happened, the company was clearly not in violation of the Agreement on March 5, 1958, but the arbitrator would have unhesitatingly sustained the union if the date in question had been prior to March 5, 1958. To have protected its interests, all the union needed to do was to have had the question phrased: "Was the Company's action in demoting John Doe and Richard Roe in violation of the Agreement?" In other words, although the demotions themselves may have been improper, there was nothing in the contract which required the company to retain employees in positions which on a certain day *no longer existed*. This is not to condone or advocate sharp practices in the framing of an issue. On the contrary, use of such tactics by either party may result in an impairment of the relationship far more costly than the original dispute. What is being advocated is that the issue submitted should be phrased with the utmost care to avoid the kind of result described above.

Generally speaking, in preparing for an arbitration case, management must try to focus on the total picture, rather than concentrate solely on its own point of view. There is a tendency for the parties to present their evidence and interpretations strictly from a partisan position. In so doing, they tend to omit items which are adverse to their interests, and their interpretations of the evidence are bound to suffer from these omissions.

Many inexperienced representatives have the rather naive concept that the arbitrator listens to the evidence and arguments of both parties and then bases his award upon the arguments of the winning party. In actual practice, however, it is highly unlikely that an arbitrator will base his award *in toto* on the arguments of either party. It is more usual for the arbitrator to examine the total picture and to make

his award on this basis. The example of inventory work cited earlier in this article may serve to illustrate how an arbitrator's decision is arrived at independently of the arguments of the parties.

In answering the question, the first issue the arbitrator had to resolve was whether the union had jurisdiction over the work or merely represented the employees. This particular question has been treated at great length in a number of cases before the National Labor Relations Board. It has been held that the authorized collective bargaining representative represents both the job in the bargaining unit, and the employee as an individual. With certain notable exceptions of jobs specifically exempted by law, such as supervisory work, the contract follows the employees even to work which they may perform outside the bargaining unit. If the parties had done the same research that the arbitrator was compelled to do, they would have learned that a company is not required to use bargaining unit employees for non-bargaining unit work (such as inventory taking), but may assign such work to office employees who are outside the bargaining unit, or to an independent firm which specializes in inventory taking. However, if management elects to use bargaining unit employees for inventory work, then the contract provisions apply.

This case illustrates why the arbitrator cannot adopt the viewpoint of an adversary, but must look at the record from the position of a disinterested neutral. It is not the arguments made by the parties so much as it is the evidence in the record (including the contract) and its presentation that determine the outcome of the arbitration. The parties must not only present effective evidence and arguments, but they must also be aware that the record will be viewed from both sides. This does not mean that a partisan cannot present valid arguments which the arbitrator may use in justifying his award. But an over-all objective view-

point of the total picture will often disclose serious weaknesses in the position of one party or the other.

A familiar anecdote may serve to illustrate a situation which applies to many representatives who become oversold on their own arguments. An adult passerby watching a sandlot baseball game between two youthful teams inquired of the catcher,

"What's the score?"

"Sixty-six to nuthin'," replied the youngster.

"It looks bad for you fellows, doesn't it?"

"Oh, I dunno, our side hasn't been up to bat yet."

Another example may suffice to show how the parties become so preoccupied with defense of their own positions that they tend to overlook the key factor in the entire case. In a manufacturing establishment, the union contended that employee John Smith had been mis-classified: that in job title he was a mechanic, but in job content and performance he functioned as a leadman. The union argued, therefore, that he was entitled to the leadman's classification, or at least to the leadman's rate of pay. At the hearing, the union produced one witness after another who testified in support of the union's claim as to John Smith's duties. Although the union acknowledged that the company had never conferred the title of leadman on him, the union witnesses insisted that Smith was performing the duties of a leadman. The company attempted to counter this testimony with other witnesses who minimized the union's contentions and who denied that John Smith had performed leadman duties.

The substantive issue in the eyes of both parties was: "Did John Smith actually perform the duties which he claimed?" The Arbitrator ruled for the company, not on the basis of any of the arguments presented, but on the basis of research that the representatives of both parties would have done well to perform. This research concerned the dividing line between an employee with exceptional initiative

who commands the respect of fellow employees and who "paces the job," so to speak, and an employee who has the title of leadman officially conferred on him by management.

The testimony in the record showed that a regularly classified leadman for that company had the delegated authority and responsibility for directing and maintaining the work of other employees. Investigation into the nature of supervisory work as interpreted by such agencies as the National Labor Relations Board suggested that the leadman classification for that company was in the nature of a bona fide supervisory job. The prevailing criteria were best highlighted in the record itself by the following testimony of the grievant:

"Q. In other words, no one has ever told you that you have the authority to discipline, correct or even recommend that?

A. No, no one ever told me that.

Q. And you never have?

A. I mentioned that at the meeting not long ago and got it clarified with Mr. Ward.

Q. In other words, you have observed these things but you have not had the authority to do anything about it?

A. I didn't feel it was my duty or authority to be a stool pigeon. If I was a Leadman it might be different.

Q. If you had been a Leader it would have been different?

A. Yes. I might have had some authority to report it directly to the supervisor and cooperate with him to pick up some of this lost motion and get production moving a little faster."

The Arbitrator felt compelled to note in his opinion that:

"... it is conceivable that part of the work Smith performed could be considered to fall within the scope of a Leader's duties. However, it is not necessary to distinguish which of the duties performed were those of a mechanic or those of a Leader. For by his own testimony Smith acknowledges that he could not and did not exercise the one vital function which distinguishes a supervisor (even on

the lowest rung of the supervisory ladder) from the most highly skilled non-supervisor employee, namely, the power or authority effectively to enforce plant discipline and direct the activities of others. Such powers cannot be assumed or undertaken voluntarily by the employee, but must be delegated by management."

In sustaining the company, these were the crucial considerations of the arbitrator, and yet they were not developed by company representatives. As all too often happens in human relation problems, the employer's main arguments were directed toward proving that Smith did not perform in large part the extra job duties which the grievant and his supporting witnesses claimed. Because, even if Smith's assertion had gone un rebutted in all of its claims, he still could not have been sustained by the arbitrator, because he failed in the one basic test which distinguishes a supervisory employee from a highly skilled worker, even one with

exceptional leadership capacity. It should be noted that there was no union contention of implicit delegation of supervisory authority upon Smith by the company.

### SUMMARY

In summary, dealing with labor relations problems is too complex and dynamic a process for undeviating rules and procedures to be applicable for all situations and at all times. The observations and comments in this article are largely intended to deepen the insights of those who have the unenviable task of making the decisions and minimizing the risks when resorting to arbitration as a solution to a collective bargaining impasse. There are no rules which are not meant to be broken at one time or another. But people who break these rules, because they are unaware of their existence, proceed at their own peril.

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*The fine art of executive decision consists in not deciding questions that are not now pertinent, in not deciding prematurely, in not making decisions that cannot be made effective, and in not making decisions that others should make.*

Chester I. Barnard

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# Lessons from the Old World for America's City Builders

*The significance of growing urban congestion, decay, and obsolescence to his business and to him personally is all too evident to the businessman. This article proposes basic changes in urban planning, municipal financing, and the role of local government to make American cities efficient for business and attractive for living.*

Every year, millions of Americans go abroad to gaze in wonder and admiration at the great cities of Western Europe. Meanwhile, as the American city dweller schemes to escape the noise, dirt, and drabness of most large cities in the United States, the physical and economic deterioration of American cities becomes a critical public problem. Is it possible that the experiences of the "Old World" in urban development hold promise for city builders in the United States? Can Europe's planners and developers teach their colleagues in America how to plan, develop, and preserve cities which can be a source of pride to their citizens and the nation?

We have much to learn about building beautiful, livable cities. By identifying the underlying factors which have made European cities so attractive to us and by recognizing our historical and institutional differences, we can find useful lessons on ways and means of building on Europe's experience.

## VISITOR'S IMPRESSIONS OF EUROPE'S CITIES

The American who visits the major European cities—Paris, London, Madrid, Rome,

Stockholm, Geneva, Copenhagen, etc.—is struck by their varied beauty, vitality, and individuality. In seeking the bases for his over-all favorable impression he can identify several distinctive but related elements. At first glance he is struck by their pulsating life, by the multitude of well-kept historical monuments and parks, by the concern over the natural beauties of the surrounding areas, and by the cleanliness that generally characterizes the European city. The mixture of old and new is not merely confined to the buildings—the life of the city dweller reflects an amazing variety of blends of ancient and modern modes of living, often picturesque and often depressing or bizarre, but always giving the city its own character. Among the citizens he senses a strong sense of tradition and loyalty to the city, which manifests itself in more than a desire for external cleanliness and neatness. Good city government, effective planning, and rational land development are found to be logical counterparts of civic pride.

The American traveler is pleasantly surprised to find that the beauties of nature have been carefully preserved in and around a large number of Europe's cities. The development

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along the Po River in Turin, the Neckar in Heidelberg, the Rhine at Bonn, or the waterfronts around Copenhagen and Stockholm are in startling contrast with the developments along New York's Hudson or East Rivers, the Chicago, Mississippi, or Ohio Rivers. Many of America's cities have somewhat belatedly recognized the importance of natural beauty to civic welfare: New York, Chicago, Oakland, Philadelphia, and many other cities are endeavoring to reclaim natural beauty lost to depredation. In order to forestall urban deterioration and its aftermath of fiscal bankruptcy, European cities carefully preserve natural beauty as one of their most valuable urban resources.

To the enthusiasm for cleanliness and natural attractions is added the respect for age and tradition. In many ways, the best maintained buildings in Europe are the oldest buildings. A study by Leo Grebler describes how in most European countries large amounts of resources have been and are being allocated to the task of restoring historical monuments.<sup>1</sup> It can be argued that European cities have demonstrated too great a concern with merely replacing the old structures demolished during World War II and that errors of the past, at great cost, are frequently perpetuated through too high a regard for tradition. Nevertheless, it would appear that American cities would do well to nurture and guard the sense of tradition by preserving the *best* of what is old, rather than the worst slum areas.

One major secret of Europe's success in preserving natural beauty and antiquity, and one no doubt irretrievably lost to America since 1776, is the heritage which Europe's kings and nobles left in monumental palaces, beautiful garden parks, and large virgin areas of woodland. The rich beauty of the Palacio Real, the Alcazar, and the Alhambra may be the greatest

heritage left by the Moorish and Spanish monarchy. Bordering the city of Turin, Italy, the traveler can drive for miles through the palace grounds surrounding Stupenigi, former hunting preserve of Italy's royalty, preserved today as open countryside. Skansen and Ladugårds Gärdet, Stockholm's beautiful park and recreational areas, were originally part of the King's deer park. The Bois de Boulogne in Paris and St. James Park in London do much today to bring the natural beauty of the country within reach of the city dweller.

The preservation of historical monuments and of open areas in European cities also has tremendous importance for their financial well-being, since it protects European cities against the same elements which contribute to neighborhood obsolescence and deterioration in many American cities.

Rigorous and positive local controls over commercial, residential, and industrial land development are important factors adding to the harmony in the European urban scene. The community is regarded as having a vital and sometimes even a controlling stake in decisions regarding long-term use of land in Europe. Subdivision and other plans for land development are accorded long and careful scrutiny by civil servants. Every attention is given to the preservation of natural and historical features, the adequacy of provisions for education, recreation, and other public purposes, as well as to the minimizing of costs to the community for roads, sewers, and other utilities.

An American visitor to Europe is surprised to find that mixed land uses can be pleasing if development and land use are adequately controlled. It is not unusual in Europe to find stores, offices, and light industrial uses in the same neighborhood, or even in the same building with residences. The distinctive thing noted, however, is that the nuisance factors are minimized. European cities have for many years followed the practice of integrating certain types of industrial plants into urban and sub-

<sup>1</sup> Leo Grebler, *Europe's Reborn Cities*, Urban Land Institute Technical Bulletin No. 28, (Washington, D.C.: 1956), p. 67.

urban communities in a manner which meets industrial location standards and at the same time preserves the amenities of the area as a place to live.

Stronger local planning and development powers in Europe are also apparent in the control of land development on the peripheries of cities. In general, European cities seem to begin and end "somewhere" and not to extend indefinitely into the country, connected with neighboring cities by an endlessly depressing chain of used car lots, junk shops, and other foot-loose fugitives from the high-rent district.

The admirer of Europe's more rational urban structure must recognize that car ownership in Europe has not even approached American dimensions and that existing transportation modes do not to the same extent favor sprawling urban areas. The United Kingdom had 12.2 persons per passenger car in 1956 while Sweden had 9.9 persons per passenger car. These ratios are similar to those prevailing in the United States in the early 1920's. By contrast, West Germany had 30.8 persons per passenger car in 1956 while the United States had one car for every 3.1 persons. It is apparent that the great onslaught of the auto has just begun in many of Europe's cities. The great plazas, esplanades, and boulevards, in combination with relatively good rapid transit facilities and a heritage of strong cycling legs, are doing much to contain the first advance.

It appears to the observer from the United States, however, that the battle has only begun and that wholly inadequate steps are being taken in most European cities to prepare for the rapidly expanding use of the private automobile. Arterial streets are still being routed through central business districts and residential areas are being laid out in some of Britain's "New Towns" with little or no provision for off-street parking or traffic circulation. The advancing automobile age may thus prove a severe test for the European city. Nevertheless, well administered land use controls and devel-

opment powers in the European urban scene promise a more successful adjustment to the automobile than was achieved in the United States.

## REGIONAL PLANNING

The better planned urban structure evident in European cities can be attributed to the skillful integration of national, regional, and local policies under the aggressive leadership of competent local administrators.

The British Town and Country Planning Act of 1947 required every local planning authority to submit development plans to the Minister for approval. These plans must allocate land for foreseeable development, must make adequate provision for residential, commercial, and industrial development, and must reserve land likely to be wanted for public needs. The Ministry advises local planning authorities during the preparation of plans and endeavors to coordinate planning in the metropolitan areas.<sup>2</sup>

Under the New Towns Act of 1946, thirteen "New Towns" have been developed in Great Britain. This represents a bold new experiment in urban planning through public development corporations. Although development progress has been slow, the "New Towns" represent striking evidence of the pressing public demands for such planning in Great Britain.

The Swedish law on town planning, in effect since 1931, covers building in all urban areas, and, in certain cases, in rural communities. It provides that no new building can be undertaken in cities or towns unless it is in conformity with the town plan. Town plans provide for adequate means of transportation with outlying areas, preservation of open country on the borders of cities, and provision for future town expansion.<sup>3</sup> Legislation in 1947 made provisions for master plans for communes and

<sup>2</sup> Ministry of Housing and Local Government Report for the Period 1950/51 to 1954, Chapter V.

<sup>3</sup> Leonard Silk, *Sweden Plans for Better Housing*, (Durham, North Carolina: Duke University Press, 1948), pp. 95-96.

for regional plans for more than one commune. (The number of communes in Sweden was reduced from 2,498 to 1,037 in 1952.) Regional plans have been drawn up for the Stockholm district and the Göteborg district. Integrated industrial and residential communities such as Vällingby and Farsta, on the fringe of Stockholm, are the result of this regional planning, guiding the growth of Swedish metropolitan areas.

German cities have long exercised strong planning and development powers. The first steps in regional planning were taken in Germany during the twenties. In 1935, under the Nazi regime, regional planning was completely centralized in a *Reichsstelle für Raumordnung* (National Land Planning Agency), and the country was divided into "planning districts" (*Planungsräume*). This centralized organization was shortlived.

With the demise of the Third Reich the central control of regional planning disappeared and the functions were taken over by the *Länder* (states). The efficiency with which the states have dealt with planning matters has varied among different regions, mainly due to the uncertainty which existed about the future organization of the administrative divisions of the country. In the post-World War II period the federal government has endeavored to implement a so-called "Green Plan" through co-operation between the German Rural District Council (*Deutscher Landkreistag*), the German Towns Federation (*Deutscher Städtebund*), and through the German Farmers Association (*Deutscher Bauernverband*). The Ministry for Housing has aided in the coordination of regional planning through its control over house-building.<sup>4</sup>

The superior financial strength of Europe's

<sup>4</sup> For details on scope and organization of the present Landesplanung see in particular section on Nordrhein-Westfalen in Hans-Burkhard Klamroth, *Organisation und Rechtliche Grundlagen der Landesplanung in der Bundesrepublik Deutschland und in Berlin*, Mitteilungen aus dem Institut für Raumforschung, Heft 16 (Bonn: January 1954), pp. A5-A16.

cities is the most strategic factor, however, in achieving desirable patterns of land development. Stronger municipal finances permit large-scale city ownership of land both within the city and on its periphery, assure the financing of long-term planning and capital improvements, and aid efficient administration. The landholdings of many German cities exceed the total developed area of the city. Many of the suburban developments around Stockholm have been carried out on city-owned land and the city government has followed a long-term policy of land acquisition on its peripheries. City acquisition of extensive land holdings on the outskirts of Madrid is a key factor in implementing the regional plan for that city. London and other British cities, particularly the "New Towns," have moved aggressively in recent years to acquire land for future development.

The sources of greater financial strength are found in the local tax structures and in extensive programs of national financial aid to European cities. Considering the multitude of different municipal revenue systems in Europe, it is possible only to touch upon a few in very general terms. British cities receive most of their income from property taxes (rates) and Exchequer grants. It is important to note, however, that the "rates" are paid by the occupant of both publicly and privately owned housing and, as such, become something in the nature of an income rather than a property tax.

German cities base their revenues on property taxes and on a special type of trade tax known as *Gewerbesteuer*, which is imposed on the income and capital of all business enterprises. It is based upon business income, capital, and payrolls. The tax on payrolls is administered as a withholding tax to be paid by the employer, but is borne in varying degrees by the employees and purchasers of goods and services as well. Each local government fixes its own percentage tax rate.<sup>5</sup>

<sup>5</sup> From: Helmut Wöber, *Die Raumordnungspolitische Bedeutung der Gewerbesteuer*, Mitteilungen aus dem Institut für Raumforschung, Heft 39, p. 15.

The Scandinavian municipalities, on the other hand, employ a combination of the individual income tax and the general property tax for their revenues. The national government in Sweden collects both national and municipal income taxes, which are paid in one package. After the end of the income year, the government pays out to the individual localities their portions of the taxes collected. Local governments establish their own tax rates in Sweden. Needless to say, this system minimizes the problems of administration and evasion of local income taxes without interfering with the independence of local governments. An important advantage of this system is that the citizen is keenly aware of the level of municipal expenditures, and the quality of his city government is of great importance to each local taxpayer.

Financial strength lies at the root of responsible and efficient European municipal governments, which are doubly blessed with strong powers and a proud citizenry. These elements make it possible for European cities to assume leadership in their own development, and, in contrast to many American cities, to appear as masters of their own destinies.

Other factors contribute to the greatness of European cities. Their rich heritage from the past in the form of palaces, parks, and monuments are guarded as living parts of the city. Rational controls over new development are combined with careful preservation of natural beauty and of existing structures and neighborhoods. Through a variety of techniques, local development is integrated with long-term regional planning. Undergirded by strong municipal finances, European cities assert positive leadership in their growth and development.

## LESSONS FOR AMERICA'S CITY BUILDERS

What can America's city builders learn from their European forebears? Important historical, economic, and institutional differences

must be considered in answering such a question. The European city's rich heritage from the past obviously cannot be equaled by the American city. Also, large-scale public ownership of land is contrary to the ideals of many Americans. Strong concepts of private property rights are deeply imbedded in American law and, although subject to continuing change, are not parallel with European traditions.

But three other factors which have been significant in the development of European cities provide important, applicable lessons for us: area planning, strong municipal finances, and positive action by urban governments. Specifically, then, American cities today can adopt three important and practicable recommendations which would go far toward effecting a more favorable comparison with their European counterparts.

*First: The planning and development powers of American cities should be extended over metropolitan areas.*

It is commonplace knowledge that America's cities are growing most rapidly on their peripheries and that the maintenance of urban living amenities requires area-wide planning and development controls. Addressing himself to the question, "Does the metropolitan area need a government?" Luther Gulick of the Institute of Public Administration says:

... In some areas the work which falls between the many jurisdictions is water supply; in others it may be waste disposal, pollution control, education or housing, health, crime or flood and fire protection. Generally, there is an imbalance of local financial resources with resulting luxury for some and tax deficiencies for others. But everywhere there is chaos as to the major circulation system and pattern including highways, railroads, air facilities, mass transportation, and provision for traffic.

It is now evident that there are inherent reasons why such problems cannot be handled effectively by bits and pieces, each in the hands of independent jurisdictions.

And when it comes to zoning, land use regulation, and the system for circulation and traffic, the underlying problems become impossible of rational attack unless there is a single center for coordinated analysis, planning, and action.<sup>6</sup>

<sup>6</sup> "Metropolitan Organization," *The Annals*, November 1957, pp. 58-59.

The formation of a National Conference on Metropolitan Problems in 1956 under the auspices of the Government Affairs Foundation was a recognition of the growing importance of metropolitan problems in American urban society. Almost 60 per cent of the population of the United States lived within 168 standard metropolitan areas in 1955 and it has been estimated that the population in these areas will rise to almost 70 per cent of the total, or over 150 million persons by 1976. It is little wonder that city planners and other public administrators focus attention on the need for improvement in metropolitan government today.

Three general types of solutions have been proposed for the problems of area-wide coordination of governmental functions in American cities:

1. Structural reorganization of governmental units in metropolitan areas, involving such steps as area-wide unification through annexation, city-county consolidation, the federated metropolis, and the metropolitan city-state.
2. Intergovernmental cooperation through joint operation of facilities, sale or provision of services by the central city to other cities and unincorporated areas, and various types of metropolitan planning.
3. The organization of metropolitan special districts as independent units of local government with the necessary legal powers to carry on specific local functions or combinations thereof.

Studies carried on by the Institute of Public Administration at the University of Michigan in 1951, by the Bureau of Public Administration at the University of California, Berkeley, in 1957, and by other agencies suggest that intergovernmental cooperation and the organization of special metropolitan districts are generally viewed as the most *expedient* solutions.<sup>7</sup>

<sup>7</sup> Betty Tableman, *Governmental Organization in Metropolitan Areas*, Michigan Government Studies,

Some authorities hold the view, however, that intergovernmental cooperation cannot be truly effective without an area-wide legislative body and that the organization of numerous metropolitan special districts may actually create severe problems of governmental coordination and tend to forestall a more fundamental solution to the problems of metropolitan areas. It is significant to note that a 1956 study, *The States and the Metropolitan Problems*, published by the Council of State Governments, recommended (a) enabling legislation authorizing the creation of broadly based metropolitan units of government; (b) review of state laws governing municipal annexation and intergovernmental agreements; (c) investigation and appraisal by the states of the adequacy of their local governments, with changes where needed; and (d) creation of a permanent state agency charged with the task of studying and helping to improve local governments—both metropolitan and nonmetropolitan.

Recent successful experience with comprehensive governmental reorganization in such communities as Baton Rouge, Atlanta, and Toronto illustrate some of the important advantages of comprehensive governmental reform. A recent report by the Metropolitan Toronto Commission of Inquiry summarized the four-year experience under a federated metropolitan government as follows:

... great progress has been made in removing the serious obstacles to the economic growth and development of the area which seemed insurmountable under the former out-dated system of rigidly divided jurisdictional areas and an equally rigid and unbalanced distribution of taxable resources.<sup>8</sup>

No. 21 (Ann Arbor: University of Michigan Press, 1951).

University of California, Berkeley, The Bureau of Public Administration, *Adapting Government to Metropolitan Needs*, Assembly Interim Committee Reports 1955-57, XIII, 11.

<sup>8</sup> "Toronto Plan Found 'Sound and Practical'," *Metropolitan Area Problems*, Volume I, Number 5, p. 3. See also Hilliard B. Wilson "Forms of Metropolitan Government" address given at City Managers' Department, 60th Annual League of California Cities Conference, October 27, 1958, Los Angeles, p. 14.

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Successful integration of county and city government in Los Angeles and similar developments under way in Honolulu, Dade County, Florida and other communities point the way for improvement in metropolitan governmental organization in cities of the United States.

*Second: American cities must be made stronger financially through a major shift in the sources of municipal revenues.*

Strong municipal finances of many European cities permit large-scale city ownership of land both within the city and on its periphery assure the financing of long-term planning and capital improvements, and aid efficient administration. Cities in the United States have been faced with the problem of revenue deficiencies since the 1930's. Expenditures of large cities rose by approximately 75 per cent from 1948 to 1956, and total local government expenditures in corresponding metropolitan areas increased even more rapidly. A leading authority on municipal finance identifies the root of the metropolitan financial problem as "... how to get more funds than existing revenue systems will produce, without unduly impinging on private production."<sup>2</sup>

The principal revenue sources used by cities in the United States to meet rising costs have been increased property taxes, state subventions, and sales taxes. Tradition, convenience, and expediency combine with the benefit principal to encourage the use of the general property tax. It is becoming increasingly evident, however, that many large American cities, whose financial needs are most critical, cannot count on constantly expanding property values and that increasing taxes on real property act as a deterrent to the very types of investment which the cities seek to encourage. Studies by the Public Administration Service have shown that the sales tax is administered inefficiently in many cities, that it is regressive on equity grounds, and that it encourages consumer pa-

tronage in tax-free areas. Growing public resistance is encountered to expanding Federal programs of financial aid for cities.

The need for increased revenues to carry forward expanding programs of local public services has forced a large number of cities to enact municipal income taxes. Sparked by the early efforts of New York and Philadelphia in the 1930's, a number of cities have adopted the income tax since World War II. Toledo, Columbus, Springfield, and Youngstown were followed by other Ohio cities in imposing a municipal tax on incomes in 1948 and 1949. Among the larger cities adopting income taxation in the past five years have been Cincinnati, Pittsburgh, and St. Louis. In a 1955 study, entitled *The Municipal Income Tax*, Sigafos estimated that only 434 of the 4,753 local jurisdictions in the United States eligible to levy income taxes had enacted local income taxes. Although six states had legal provisions permitting local income taxation (Kentucky, Minnesota, Missouri, New York, Ohio, and Pennsylvania), use of the municipal income tax was largely confined to Pennsylvania (142 cities) and Ohio (16 cities). Only five states have constitutional prohibitions against local income taxation (Florida, Idaho, Louisiana, Maryland, and Tennessee).

Present municipal income tax laws in the United States have been criticized as lacking exemption and progression features. The taxes presently in effect in Pennsylvania, Ohio, and a few other states lack the all-important administrative simplicity and rest largely on wages and salaries. It is also undoubtedly true that evasion problems have arisen in attempts at local administration. It seems abundantly clear, however, that a state-administered municipal income tax, modeled after the federal income tax, would be superior in many ways to the sales tax as a complement to the general property tax in the metropolitan revenue structure. Joint collection of municipal and state income taxes on a basis similar to that in effect in Scan-

<sup>2</sup> Lyle C. Fitch, "Metropolitan Financial Problems," *The Annals*, November 1957, p. 66.

dinavian countries would do much to simplify and improve the administration of such taxes and their more general adoption would reduce greatly the public distaste for local income taxation.<sup>10</sup>

The urban dweller today knows that it costs money to administer a large metropolitan area and that it costs more to run it better. He is not so naive as to believe that the landlords, through the general property tax, the federal or state governments, through subventions, or the out-of-town visitor, through sales taxes, will pay, in the last analysis, for the expenses of his community. Why not, therefore, adopt the community income tax as the most practical means of restoring the necessary financial strength to America's cities? An income tax is a fairer method of allocating tax burden than either the general property or sales tax. Adoption of a community income tax, with appropriate exemptions, would reduce some of the deterrent effects upon investment of the constantly increasing general property taxes and would eliminate many undesirable features of the municipal sales tax. Greater financial independence of cities would reduce their reliance upon federal and state government subventions. The large-scale adoption of community income taxation, integrated with metropolitan government organization, would provide the basis for a revitalization of metropolitan areas in the United States.

*Third: American cities must shift from their traditional negative role to become positive and controlling factors in urban planning and development.*

Improved financial strength and broadened regional planning and development powers should set the stage for the emergence of American cities as positive forces controlling their future development. Federal and state enabling legislation of the past decade has

<sup>10</sup> The city of Fort Worth, Texas, held a special election to approve the levying of a one per cent income tax on November 18, 1958, but the proposed amendment met with defeat.

broadened the planning and development powers of local governments. Zoning and condemnation powers have been consistently extended and broadly interpreted by the courts. It seems fair to say that what is most needed is dynamic leadership from within urban governments. The assumption by American cities of such a key role will require a new cadre of highly trained city builders and administrators. The tasks of building and rebuilding cities are not for the old ward-boss or the spare time of the local banker or contractor. An able and dedicated urban civil service, the *sine qua non* for rational metropolitan development, is of course dependent upon improved financial strength of metropolitan urban communities.

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Europe's great cities can provide an inspiration for city builders in this country. Cities must be good places in which to live as well as to make a living. The attractiveness of nature, open space, fresh air, quiet, grass, trees, and water must be reclaimed from the inroads of concrete, asphalt, and smog. Places of amusement, music halls, art museums, parks, and playgrounds, as in Europe, must be available to all the people and in the center of cities. In the urge to tear down and redevelop, it is important to remember to preserve the best of that which is old and traditional. Proper maintenance and preservation can do much to reduce the rate of urban obsolescence, to shine up the statues and restrict the ugliness and garishness of much commercial development. Public transportation must be made so cheap, attractive, and convenient that people will have no incentive to bring cars downtown. The subsidies needed to accomplish this will be far less than the cost of freeways and parking plazas in the centers of cities and will free the centers from the noise, dirt, and inconvenience of present-day auto traffic.

Finally, the city dweller must be able to escape to the country, and it shouldn't be fifty

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miles away. City builders must reclaim land on their peripheries from a sea of auto graveyards, gasoline stations, and country slums and restore the boundaries between city and country.

The achievement of these goals will undoubtedly require stronger public controls over land development. Recent steps taken in many American cities and states to control unsightly and unharmonious land development and the general strengthening of concepts of public control reflect an underlying trend in land use policy in the United States. The very pace of urbanization in the United States, however, dictates the necessity for a speed-up in public understanding and acceptance of the important role of government in preserving the amenities and values in urban areas. The experience in many European countries indicates that relatively high and stable levels of private investment in land development can be maintained

under a broadened system of public controls. How many billions of dollars in expenses for flood damage, land condemnation for public uses after development, and needlessly expensive public improvement might be avoided by adopting a system with some of Europe's safeguards.

These are the lessons of the "Old World." They seem to involve alternatives and techniques known to American cities for a long time. The real contribution from European cities, therefore, is the inspiration to use ways and means already at hand.

It is clearly evident that the adoption of these techniques will involve sacrifices in time, short-run profits, and liberty of action for the individual property owner. It is only through such sacrifices, however, that American metropolitan areas can achieve a rational structure and their citizens develop that sense of pride and respect which is the mark of the great city.

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*Hell is a city much like London—A populous and smoky city.*

Percy Bysshe Shelley (1819)

# Output Decisions Under a Guaranteed Annual Wage Plan

*—how a GAW plan affects the level and scheduling of output  
and changes the concept of labor cost from one of variable to  
opportunity cost.*

The guaranteed annual wage plan<sup>1</sup> of the George A. Hormel & Company creates many problems which must be considered by the Company in its decision as to how the labor force should be used. This agreement not only affects the Company's decision on the best level of output, but also raises many complications in the preparation of accounting reports to be used for supporting output decision and for reporting the results of an output decision which has already been made. These problems are the subject matter of this article. A brief description of the Hormel Company and its guaranteed annual wage plan precedes the analysis. By way of conclusion, the applicability of these problems to other firms that do not have a guaranteed annual wage plan is discussed.

## THE HORMEL COMPANY'S PLAN

The Hormel Company is a meat-packing company with its main plant in Austin, Min-

<sup>1</sup> For a description of their guaranteed annual wage plan and its effect on the operations of the Company, the author is indebted to the officials of the George A. Hormel & Company. However, quantitative data used throughout his article are hypothetical and bear no specific relationship to actual Company operating statistics.

nesota, and with several other plants and sales branches located throughout the United States. In the early 1930's, the Hormel Guaranteed Annual Wage Plan was established. Because of the nature of the meat-packing industry and the number of employees covered, the Hormel Plan has received much attention since its inception. This plan guarantees a standard number of hours of pay each week to all covered employees. The employee receives each week for 52 weeks a minimum gross pay which amounts to his wage rate times the number of hours in his standard work week. Thus, if the wage rate is \$2 per hour and the standard work week is 38 hours, the employee's minimum gross pay is \$76 per week. This weekly sum may be exceeded because of overtime provisions which will be described later and which make it desirable for the Company to avoid overtime unless the entire labor force is being fully utilized.

The yearly guaranteed amount may also be exceeded because of payments for holidays and vacations. For example, an employee may actually work 1,976 clock hours (52 weeks  $\times$  38 hours) during the year and receive a gross weekly pay of \$76 for this period. During the

MR. JAEDICKE completed this study, with the help of a Ford Foundation grant, while he was a member of the faculty of the University of Minnesota. He is now Assistant Professor at the Harvard Graduate School of Business Administration.

year he will accrue vacation and holiday hour credits. If these hour credits amount to two weeks, the employee will be paid for two additional weeks at the end of the year. This pay, however, is at straight time rather than at time and one half. This situation is referred to as one of "over hours," as compared with "under hours" which occurs when an employee is paid for the guaranteed number of hours but works less than this number (adjusted for holidays and vacations).

The guarantee of the Hormel Company is a continuous guarantee; that is, the Company must give the employee 52 weeks' notice before he can be released. Hence, any decision to reduce the size of the labor force must be made 52 weeks in advance if a cost penalty is to be avoided. Having made this continuing guarantee, the Company has the right to use the labor hours when (throughout the year) and where (on what operations) it wishes, subject to certain overtime restrictions. Since the overtime restrictions are somewhat complex, they will be discussed in detail. The intent is not to burden the reader with needless detail but rather to clearly establish the limitations which are important considerations in the later discussion.

The Company is subject to four different overtime restrictions. If operations are within all four of these restrictions, the employees will be paid at straight time. If any one of these restrictions is exceeded, the Company will have to compensate the worker at time and one half for all hours in excess of the restriction which

was broken. These restrictions<sup>2</sup> are as follows:

1. If an employee works in excess of 12 hours in any one day, he must be paid at an overtime rate for all excess hours regardless of the number of hours worked during the week. Thus, if an employee works 14 hours in one day and only a total of 14 hours for the week, he must be paid overtime for 2 hours.
2. If an employee works in excess of 10 hours in any one day, the Company must pay overtime for all hours worked in excess of 48 hours for that week.
3. If an employee works in excess of 53 hours in one week, he must be paid overtime for all hours over 53 hours in that week. This provision applies even if the employee is within the daily overtime limitations set forth in (1) and (2) above.
4. If an employee works more than 2,000 actual clock hours for the guarantee period (the labor year), the Company must pay overtime on a retroactive basis for all hours in excess of 40 hours per week. The standard work year for most employees is 1,976 hours (38 hours per week).

In order to illustrate the overtime restrictions, several examples are given in Tables 1 and 2. Referring to Table 1, assume that an employee works 2,005 hours during the year. For the five weeks listed in Table 1, the retroactive overtime computation is given in Table 2.

<sup>2</sup> The overtime restrictions are taken from the labor contract at one plant.

TABLE 1  
COMPUTATION OF OVERTIME PAY HOURS

Week	Clock Hours Worked							Regular Pay Hours	Overtime Pay Hours
	Mon.	Tues.	Wed.	Thurs.	Fri.	Sat.	Total		
1.....	9	9	9	9	9	8	53	53	0
2.....	10	10	10	10	10	8	58	53	5
3.....	10	10	10	11	10	0	51	48	3
4.....	13	8	8	8	8	0	45	44	1
5.....	13	10	10	10	10	0	53	48	5

TABLE 2  
COMPUTATION OF HOURS TO BE PAID RETROACTIVELY AT  $\frac{1}{2}$  TIME RATE

Week	Hours Worked	Regular Pay Hours	Excess Hours	Overtime Hours Paid During the Year	Hours to be Paid Retroactively at $\frac{1}{2}$ Time Rate <sup>1</sup>
1.....	53	40	13	0	13
2.....	58	40	18	5	13
3.....	51	40	11	3	8
4.....	45	40	5	1	4
5.....	53	40	13	5	8
Total.....	260	200	60	14	46

<sup>1</sup> Employees have already been paid for these hours so the extra pay at one-half time rate puts the overall pay rate for such hours on a time and one-half basis.

## PROBLEMS OF WORK SCHEDULING

One of the important problems created by the Hormel guaranteed annual wage plan and the related overtime provisions involves work scheduling to insure the best use of the labor force throughout the year. For example, assume that the Company has guaranteed 800,000 man-hours for 1958. Once the estimated level of output has been established for 1958, the Company must schedule the output among the individual workers to obtain the fullest possible utilization of the 800,000 guaranteed hours. It is undesirable to pay over hours (hours in excess of the guarantee) to some employees and under hours (payment for time not worked) to other employees at the same time. It would be particularly undesirable to be in such a situation if the over hours are paid at an overtime rate. Actually, the Company does not mind paying over hours at a straight time rate if the general labor situation is one of over hours. This being the case, the over hours would be productive hours. The situation to be avoided is to overuse one segment of the labor force while underusing some other segment.

The labor force of the Company is divided into "gangs." The size of each gang may vary from only a few to several hundred employees depending on the particular manufacturing process or job involved. There is a foreman in charge of each gang. The size of the gang

can be adjusted if necessary, with the released workers moving to some other gang or to the extra gang.

The problem of work scheduling and the control of labor hours occurs at two different levels. First, given a certain output schedule, the Company must decide on the proper size of each gang. Second, the gang foremen must make certain that the individuals on the gang are used effectively. The objective of both of these decisions is the same: to secure a full and even utilization of the labor force and prevent under and over hours from being paid simultaneously. Both of these problems must be solved within the framework of the overtime restrictions and the basic annual guarantee.

*The Determination of Gang Size.* The Company has several choices in establishing the size of each gang. The first step, in any case, is to estimate the rate of output for each month during the year. This estimate depends primarily on the forecast of livestock availability and the forecast of the selling market (including prices in each case). Once the Company has determined the killing schedule, the size of the gangs required to put the schedule into effect can be determined. However, at this point, the vacations and holidays must be considered by adding these hours to the hours required for processing the desired level of output. The Company may choose a gang size

large enough to kill the estimated number of livestock and cover all vacation hours. If this is the choice, the gang may work under hours until the vacation period and then, with a reduced gang size, begin to work over hours until the accumulated under hours are balanced out.

Another choice which might be made by the Company would be to establish a gang size large enough to handle the output, but not the vacation and holiday requirements. The additional men needed to handle the vacations would be used during nonvacation months on jobs which could be started or discontinued temporarily. The product involved in these temporary operations might be one that can be processed and stored for sales throughout the year or one which can be sold either processed or unprocessed. When the vacation months arrive, these temporary operations could be discontinued (the product being either stored or sold unprocessed) and the size of the livestock-processing gangs could be increased. The choice between these two methods of handling vacations would be determined primarily by whether or not the temporary processes are profitable. This, in turn, would depend on the availability and the cost of livestock and the market value of meats and by-products.

The overtime restrictions limit the minimum size of any gang. This is more of a problem than it seems because the supply of livestock fluctuates. Because the output does fluctuate throughout the year, the Company may have to adjust the gang size in order to work enough over hours in times of great supply and yet prevent under hours for the year. If the overtime restrictions (particularly on a weekly basis) were more lenient, such adjustments in gang size would perhaps be unnecessary. For illustrative purposes, assume that three hours of labor are required for processing one unit of raw material. The supply of raw materials and the general production situation is given by Table 3.

TABLE 3  
LABOR HOURS REQUIRED TO PROCESS LIVESTOCK

Quarter of the Year (13 weeks)	Estimated Livestock Processing Schedule	Labor Hours Required
1.....	10,000	30,000
2.....	20,000	60,000
3.....	5,000	15,000
4.....	15,000	45,000
Total.....	50,000	150,000

Assume that the flow of livestock is uniform within each 13-week period. In this example, if it were not for the weekly overtime restrictions, the 50 thousand livestock could be processed with a 75-man gang, each member of which works a total of 2,000 hours for the year. Thus, the Company would meet the annual overtime restrictions (as well as the daily restrictions), but the average work week by quarter would be as given in Table 4.

TABLE 4  
AVERAGE WORK WEEK REQUIRED TO  
PROCESS LIVESTOCK

Quarter of the Year	Average Work Week for a 75-Man Gang
1.....	30.8 hours per man
2.....	61.6 hours per man
3.....	15.4 hours per man
4.....	46.2 hours per man

As shown in Table 4, the work weeks during the second quarter would call for 61.6 hours per week and the Company would exceed the 53 hours per week overtime limitation. Thus, a 75-man gang throughout the entire year is not possible without paying overtime.

In order to avoid overtime (assume a gang of 75 men), the Company will need to increase the gang size during the second quarter to obtain at least 8,325 additional hours (60,000 hours required less 51,675 hours possible for 75 men working 53 hours per week for 13

weeks). These additional men may be transferred from a temporary operation (where the product involved may be stored or temporarily discontinued) or they may be transferred from some operation which has enough of a slack season to permit the dovetailing of the two operations.

In other quarters throughout the year, the gang size must be reduced to less than 75 men in order to use the 8,325 hours which the original gang could not work during the second quarter because of the overtime restrictions. The excess men might be used to build up other regular operations during a busy period or they might be transferred to a temporary operation.

*The Problem of Gang Balance.* Once the Company has decided on the size of each gang and has met the yearly and weekly overtime restrictions, the second problem of achieving a balance within *each* gang must be solved. The foremen must be kept informed of the hours of each individual so that the overtime restrictions are not exceeded by some workers while others are being paid for time not worked. In other words, as each gang must be fully or evenly used, so must each individual member of each gang. This problem can be solved by mere bookkeeping, but the simplicity of the problem should not hide its importance from a cost viewpoint.

The foremen of each gang must see that no one individual builds up too many over hours if the gang situation is one of under hours. If this happens, the employee may exceed the yearly or weekly overtime restrictions. If setup time is required, it must be passed around or the setup man must be sent home early so that he will not build up too many hours. Although these problems can be solved by proper policing and hour-reporting procedures, they are nevertheless a possible source of large cost inefficiencies. These problems are a direct result of the guarantee and overtime provisions.

## THE OUTPUT PROBLEMS

In the preceding discussion, it was assumed that the level of output had been determined. Given this level of output, certain work-scheduling problems had to be solved. The problems to be investigated in this section of the article are the effects of the Hormel labor rigidities on decisions regarding the proper level of output. For convenience, this discussion will be divided into two sections as follows: (1) the effect of the Hormel guaranteed annual wage plan on the decision of the estimated level of output for the coming year; and (2) the effect of the Hormel guaranteed annual wage plan on changes or adjustments in the output schedule throughout the year. In the discussion it is assumed that the Company faces a given process of production.

*The Level of Output.* Assuming that profits are to be maximized, the level of output for the coming year would be chosen by equating marginal cost and marginal revenue. Assume, for example, that the Company could estimate the following data for 1958: (1) the number of livestock to be available for 1958, (2) the cost of the livestock, and (3) the selling value of the processed product at the time of sale. The output schedule chosen would be one where the difference between the total cost and the total revenue is at a maximum (where marginal cost equals marginal revenue). The real question is whether the labor cost is fixed or variable with respect to output. If the wage bill is fixed, there is really *no* output decision to make at the beginning of the year; that is, there is no question of how much labor to contract for, just a question of when to use the available labor force. If the wage bill is variable with respect to output, an output decision must be made at the beginning of the year to determine the *size* of the labor force to be employed throughout the year.

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cost: raw materials cost, labor cost, and plant costs. There is little doubt that while the raw materials cost is variable with respect to output, a large part of the plant cost is fixed. If the Company could adjust the size of its basic labor force (without a cost penalty) at the beginning of each year, the labor cost would be variable with output and this cost would then be relevant to an output decision at the beginning of the year. The independent variable which is the supply, cost, and selling value of the livestock would have to be estimated at the beginning of the year so that the size of the labor force could be determined. The output decision at the beginning of the year would be important under these conditions. Under the terms of the guarantee, however, the basic labor force (the problem of increasing the size of the labor force is discussed later) is fixed, because the Company must give 52 weeks' notice before it is possible to make a cost-free adjustment. Hence, in looking at the coming year the Company has a fixed plant and a fixed minimum amount of labor. The important decision is to determine *when* to use this minimum labor force throughout the year, since the size is already determined. Thus, as far as the basic labor force is concerned there is no output decision at the beginning of the year; the only important output decision is a continuing one.

The Company does face a decision regarding the size of the labor force in the sense that the guarantee contract sets the floor or minimum size of the labor force. If more labor is desired, the Company can hire more workers or pay overtime to the existing labor force. The decision to hire more workers for the Hormel Company is similar to the decision to lease a machine. It is impossible to buy an hour of labor time because if a new man is hired the Company must buy at least 1,976 labor hours from the day that a 52 weeks' notice is given. This is like being able to terminate a lease one

year from the date of notice. Consequently, the only output decision necessary at the beginning of the period calls for a long-run (more than one-year) projection of output possibilities. If the long-run projection of livestock cost and supply and product selling values indicate that a permanent increase in output is desirable, the Company may commit itself and hire more laborers. If the long-run projections call for a decrease in the labor force, such a decision must be made a year in advance. For all practical purposes, however, such a projection, although it is important, is almost impossible to make. Thus, the important decision to be made is a continuing decision—which output to buy throughout the year, *i.e.*, when the labor force should be used. It is possible to have a problem of choosing the size of the labor force at the beginning of the year; but, because of the difficulty of projecting the future, such a decision probably would not be reduced to a quantitative measurement.

*Changes and Adjustments in Output Throughout the Year.* The important question regarding changes or adjustments in the level of output insofar as the Hormel guarantee is concerned is to determine when labor has a cost and when it is costless. The output decision at the beginning of the year fixes the basic labor force and thus its cost is fixed. However, in decisions of when to use the labor force throughout the year, the cost of labor is neither a fixed nor a variable out-of-pocket cost but is an *opportunity cost*.

Assume that the labor year is the 52-week period ending October 31. For this 52-week period the Company has guaranteed approximately 2,000 hours of pay to each worker. If the Company decides to use one twelfth of the available hours in November, the cost of the labor used depends on the output possibilities for the remainder of the labor year; that is, it may be more profitable to use less than one twelfth of the hours in November because more

livestock will be available at more favorable prices (considering both the buying and selling price possibilities) in December and later months. Thus, by using the hours in November, the Company may be unable to take advantage of a favorable market later in the year without (1) incurring overtime (even on the hours used in November) or (2) increasing the size of the labor force and perhaps paying some under hours for the incremental workers. Consequently, the cost of using labor at any time throughout the year is an opportunity cost and depends on the opportunities facing the Company for the remainder of that guarantee period.

As has been pointed out, the output opportunities that will exist in the future depend on a projection of the availability, the cost, and the selling value of livestock. It is possible to decide when and how to use the labor time only after this information has been assembled. The measurement problems encountered in establishing this information are extremely difficult to solve. It is almost impossible to make an advanced prediction for even a few months. The fact that the Company has a guaranteed annual wage and does face certain overtime restrictions complicates the decision-making process by shifting the pertinent cost calculation from an out-of-pocket cost to opportunity cost.

The evaluation of how operations are progressing cannot be made by comparing November, 1957, with November, 1956. Very little would result from such a comparison because the two periods might differ according to the opportunities that exist for the remainder of the year. If the gangs were working under hours in November, whether this is good or bad would depend entirely on the prices and supply of livestock for the remainder of the year. The cost of labor used during November may be zero or may be extremely high—higher than the out-of-pocket cost. The following two situations illustrate this point.

1. (Under-Hour Operations) Assume that

the Company has been operating at under hours for the first quarter of the year, i.e., during the first quarter of the year, only one sixth of the labor hours have been used. Whether this situation is desirable depends on the future output possibilities. The danger is that this situation can continue so that regardless of how much time is worked in the remainder of the year, payment for time not worked will have to be made. To illustrate, assume that one worker has worked 1,500 hours of a 2,000 hour guarantee by October 1. There are only 4 weeks remaining in the labor year to work off 500 hours. Even if the plant works 53 hours per week, only 212 hours could be used. In this case 288 hours can never be used, but will have to be paid. In such an instance, perhaps the hours used during the previous November were costless.

The real question in an under-hour situation is when do the hours cease to have an opportunity cost? If only one third of the hours had been used by the end of the second quarter, the Company might feel that some of the hours are free and two alternatives seem possible.

On a purely theoretical analysis, it would seem that the Company can pay more for livestock in an attempt to increase the supply and work off the under hours. Such a course of action may "minimize" a loss rather than maximize a profit. However, the unit variable cost of livestock is not constant in that the higher price for the additional livestock will tend to become the price for all livestock. Hence, the marginal cost of livestock increases rapidly. Also, the impact of such a procedure on the selling market and future supply of livestock is so uncertain that this procedure is probably undesirable.

The Company may search for other uses of the excess labor time. It may be possible to start certain related operations that can be operated on a temporary basis. When the supply of livestock begins to increase, the temporary operations can be stopped. The choice of which processes to engage in can be made by

maximizing the return (selling value less variable costs other than labor) on the labor hours used by each process.

2. (Over-Hour Operations) As a second example, assume that the Company is operating at over hours and finds an extremely favorable market and supply of livestock. A question may arise as to how to obtain additional output. If the situation appears to be temporary, the Company may increase the work week to 53 hours or possibly go into overtime and then plan to scale down operations later in the year. The cost of this plan depends on the prices and selling value of livestock later in the year. If the increased supply appears to be permanent, it may be possible to hire additional labor. The cost of this alternative is the out-of-pocket cost of the additional labor used plus any payment for time not worked that might have to be made to these workers this year or in the following year.

## THE ADEQUACY OF ACCOUNTING REPORTS

With the need for opportunity cost information, a real question arises as to the adequacy of conventional accounting reports. Two types of reports will be considered: (1) profit reports—internal accounting reports designed for reporting the results of some past period, and (2) cost reports—accounting reports prepared as an aid in making output decisions.

*Profit Reports.* How should the labor cost be computed for purposes of evaluating the results of some past month's operation? Ordinarily, the out-of-pocket cost of the labor used (ignoring inventory fluctuations), perhaps adjusted for fringe benefits, would be deducted from the revenue in the determination of the net profit for the period. However, with the guaranteed annual wage, the pertinent or actual cost that should be used for monthly profit reporting depends in part on what happens during the remainder of the labor year. The out-of-pocket cost of the labor used during any one month could be either higher or lower than

the actual cost. The out-of-pocket cost and the actual cost would be the same only if (1) the actual labor hours worked by each worker during the labor year are the same as the hours guaranteed to each worker for the same period, and (2) if no overtime payment is made. The actual cost of the labor used in any particular month might be different from the out-of-pocket cost for at least two reasons. Two examples are given to illustrate this conclusion:

1. (Under-hour operations.) Assume that the Company has guaranteed 2,000 hours of work for the labor year and 200 of these hours were used during November. If the wage rate is \$2.00 per hour, the November labor cost would be \$400 only if the remaining 1,800 hours are worked during December and later months and no overtime is paid. If only 800 of the remaining 1,800 hours are worked during the labor year, the effective cost of labor would be \$4.00 per hour (\$4,000 paid/1,000 hours actually worked), and the cost of the labor used during November would be \$800 instead of \$400. The out-of-pocket cost of labor in December and later months (when the hours not worked are paid) would be higher than the actual cost.

2. (Overtime operations.) Assume that the situation is the same as given above except that the Company actually uses 1,900 hours during December and later months. Also, assume that the 200 hours used during November were used at the rate of 50 hours per week for 4 weeks. The cost of the 200 hours used during November, under these conditions, would be (1) \$400 paid during November, plus (2) \$40 (10 hours per week for 4 weeks times \$1.00, the overtime premium), the overtime paid in December and later months on November hours as a result of exceeding the 2,000 hour guarantee. The out-of-pocket cost of labor during December and later months would be higher than the actual cost because of the overtime payment on the November hours.

From the discussion above, it is apparent that the out-of-pocket cost of labor used during

any month may be a very poor measure of the actual cost. The actual labor cost for any part of the labor year cannot be determined with certainty until the labor year has been completed. The value of an interim report prepared for a month coming early in the labor year is probably quite limited. Perhaps the report could be improved by making it more narrative; that is, a description might be added to the report which would give information on the estimated possibilities for the remainder of the year. Such a description might aid in establishing the meaning of the out-of-pocket cost as a measure of the actual cost. As the year progresses, the Company may be better able to evaluate the opportunities and might adjust the labor cost figure to reflect any under hours or overtime that might be expected.

*Cost Reports for Decision-Making.* The main difference between costing for historical profit reporting and costing for decision-making is that in one case a past period is involved and in the other case the future is the important time period. For making output decisions, the Company needs to know the cost of using a certain number of hours for a coming period rather than the historical cost of the hours used last period. The cost of using hours in the coming period is an opportunity cost and depends on the opportunities existing for the remainder of the labor year. If the question of whether or not to use 200 hours during November arises, the cost of these hours might be zero (if they could not be used later in the labor year) or the cost might be the net realizable value of product foregone later in the year because the hours were used during November. Still another possibility is that the pertinent cost for decision-making might be the overtime out-of-pocket cost which must be incurred to produce output later in the labor year. The out-of-pocket cost of labor may be a very poor indication of the opportunity cost as described above. The out-of-pocket cost of an hour of labor indicates that the value to the Company of each hour of labor time is equal. In trying

to decide when to use the labor, the value of an hour of labor time, of course, varies. This value depends on the cost and selling value of livestock, which fluctuate throughout the year.

The problem of choosing output could be solved, under conditions of certainty, by maximizing the return according to the scarce production factor which, in this case, is labor time. Conceptually, the Company should compute the excess of the selling value over the cost of livestock (this excess will be referred to as the marginal income) for each batch of livestock that might possibly be purchased during the coming year. The marginal income for each batch should then be divided by the labor hours required to process it. The output should be chosen for the coming year in order to maximize the rate of return on production hours; that is, the batches of livestock with the highest marginal income per labor hour should be chosen first. This procedure will enable the Company to choose the best use for the 2,000 guaranteed hours.

If overtime is to be incurred or if more workers are to be hired, the regular marginal analysis should be used; that is, in order to decide whether or not to pay overtime to process certain batches of livestock, the Company should compare the additional revenue with the additional cost. The cost should include any overtime payments. If the revenue is greater than the cost, the livestock should be processed since there is no scarce factor.

Under conditions of uncertainty, the same general approach as outlined above might possibly be used to decide how to use the basic 2,000 guaranteed hours. If the question is whether or not to use 200 hours during November, the marginal income per hour for November livestock should be estimated. Then, in order to determine whether to use these hours during November or whether to save the hours for later months, the Company should estimate the marginal income per hour if the hours are used later in the year. If the marginal income per hour for later months is esti-

ated to be higher than the marginal income of November hours, the hours might be saved and used later. It may be that the marginal income per hour, if the hours are saved, can only be roughly estimated and cannot be reduced to quantitative measurement. However, by using this approach, the pertinent comparison will always be made even if all of the data cannot be reduced to dollar terms.

### IMPLICATIONS FOR OTHER FIRMS

The effect of the Hormel guaranteed annual wage plan on decision-making is extremely important because of the change in the pertinent cost concept. The agreement also creates problems in reporting the results of past operations. This is not, however, a common type of wage contract. This being the case, are the ideas presented in this article of limited usefulness?

The Hormel contract fixes the minimum amount of labor and the labor cost for each 52 week-period. Subject to certain overtime restrictions, the labor hours can be used throughout the period as the Company desires. (In this respect, the Hormel situation is more flexible than in other firms where the overtime restriction is 40 hours per week.) With respect to the guarantee, it seems that such a situation could exist in any firm in which management feels a strong obligation not to lay off employees, even in times of depressed business activity. Such an attitude, even though there is no formal contractual arrangement, creates a situation much like that of the Hormel Company. As a matter of fact, if management has this attitude (even with regard to seasonal fluctuations) it seems more realistic to recognize that the labor cost is fixed in total (and is an opportunity cost) rather than to assume that direct labor is always a variable cost, an assumption which appears throughout accounting literature.

It is also possible for the cost concepts of production factors other than labor to be affected by other kinds of agreements which affect certain costs. For example, a firm may

enter into a long-term lease contract for equipment or a purchase contract for raw materials, subassemblies, or electric power where the contracts specify a minimum supply for a given period. The cost of using such a factor is the opportunity cost of not having the factor later in the contract period, or the cost of having to pay a different price for an additional supply of the factor. The opportunities which the firm faces determine the pertinent cost, and this cost may be either higher or lower than the out-of-pocket cost of the factor. In such a situation, the out-of-pocket cost may be unrealistic for both decision-making and profit reporting.

In conclusion, it appears that contractual arrangements which specify the price and quantity of production factors create a need for opportunity cost information. To recognize this need is important. Such a recognition creates substantial doubt as to the adequacy of conventional profit reports and cost accounting analysis where these tools concentrate on out-of-pocket cost calculations.

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CHARLES K. FERGUSON

# Management Development in "Unstructured" Groups

*—an account of how a new training device works to improve  
the personnel skills of managers.*

A prominent airline official, in the early stages of his participation in one of the many "unstructured groups" sponsored by various business, social, educational, and industrial agencies for executive development, compared his feeling to that of the pilot who radioed, "I'm lost, but making damn good time."

The ambivalence of this executive's feeling is typical of almost everyone's first reaction to his participation in an "unstructured group," for the experience is not quite like any other learning experience. An "unstructured" group is one in which there is no agenda, no predetermined subject to discuss, and no rules of procedure; its members are strangers to each other, and—what is more—despite the presence of a training-staff member, it has at the outset no leader. And executives find themselves in this amorphous, what-are-we-supposed-to-do situation, with the assumption that they will develop further managerial skills.

Managers who have never been part of such a group may be nonplussed to learn that such organizations as the American Red Cross and the American Cancer Society on one hand and Esso Standard Oil on the other take their top executives off to isolated resorts to participate in such groups, presumably for management development. That anything constructive could

come out of such an Alice-in-Wonderland situation has no logic on the face of it. To some, if only social service organizations were engaged in such an activity, it could be explained on the basis that such organizations, full of "do gooders" as they are thought to be, can be expected to try anything. And when military commands of the Air Force, Army, and Navy follow the pattern and place similar reliance upon unstructured groups for the training of managers, skeptics can charge it off to the fact that, after all, the services also are public bureaucracies and like social agencies do not spend their own money on wild schemes. But, when hardheaded, profit and loss conscious, tough-minded industrial firms like Esso Standard Oil, Champion Paper and Fibre Company, R.C.A., and Republic Aviation,<sup>1</sup> trod the same path, it may be time to look at what these strange groups have to offer the development of managerial resources.

<sup>1</sup> Esso Standard Oil is in the process of conducting a series of two-week management development programs built around unstructured groups at the Gull Hills Dude Ranch, Gulf Hills, Mississippi, for between five and six hundred managers from its Baton Rouge, Louisiana refinery. Republic Aviation uses a residential center known as Scotch Mist on Long Island and Champion Paper has such a center in North Carolina. These companies and others are investing a great deal of resources in the systematic use of unstructured groups for management development purposes.

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The unstructured group, as it is currently being used for management development purposes by social, governmental, and industrial organizations, was conceived by the late social psychologist, Kurt Lewin, and his students and colleagues. It is a contrived group of ten to twenty people who are as nearly as possible unrelated to each other by pre-existing organizational or friendship ties. Members of a given group are as close to being strangers to each other as it is possible to arrange and, also insofar as possible, do not have hierarchical relationships in the same organization. Training staff members in a group consist of one or two persons highly experienced in this kind of training who typically create a leadership vacuum by refusing to function in a conventional leader or teacher role.

The beginning stage of a group is characterized by deliberate attempts to minimize status differences (participants are encouraged to wear sport clothing, to call each other by first names, etc.), and to encourage interaction (seating is usually circular or arranged with the greatest opportunity for eye-to-eye contact among all members of the group). After some brief attempt at orientation by one or more members of the staff, an unstructured group comes face to face with the hard unyielding fact "that there is no structure except that we are all here in this room, that nothing further will be done for us, we do not know each other, we do not know clearly what we are supposed to do, we have no organization, no method, not even any common ideas to begin with, and we are committed to stay together for several days or several weeks."

Here the group members sit, looking at each other, grown men and/or women, high salaried people, busy important leaders at home, stuck off somewhere in the comfortable wilderness for a whole week or two or three, with no course charted, no leadership offered, no precedent to follow, with the need to make something out of an apparent nothing.

One should not be expected to believe that out of shapelessness can come shape; that out of lack of structure can come organizational methods, skills, growth and development. Yet, with very rare exceptions, that is precisely what happens. Growth comes not to children or adolescents but to mature, experienced, responsible managers.

An unstructured group of this type is variously called a T group (for training), a D group (for development), a B group (for basic), etc., but whatever its name, its basic characteristic is relative absence of initial structure. The unstructured group as an instrument for training was pioneered by the National Training Laboratory in Group Development at Bethel, Maine, under the leadership of Leland Bradford, and over the last dozen years has been embroidered, refined, modified, and experimented with both at Bethel, in other myriad activities of the National Training Laboratories, and in a number of Regional Training Laboratories and Universities throughout the country. The development of unstructured groups has also been influenced by the students and works of Carl R. Rogers, J. L. Moreno and others. The University of Michigan, the University of California at Los Angeles, the University of Chicago, the University of Texas, Boston University, Massachusetts Institute of Technology, California Institute of Technology, and the University of Utah, have been particularly active centers in using and expanding the unstructured group for management development purposes.<sup>2</sup>

We could compile a lengthy list of agencies, groups, and firms across the country that have used unstructured groups as a primary instrument for managerial development. These have

<sup>2</sup> These centers conduct a great variety of programs using the unstructured group, both for undergraduates and for various professional and vocational groups. Programs range all the way from intensive residential sessions to once-a-week non-residential sessions spread over several months.

had an impact upon literally thousands of managers.

Why? Why all the interest in unstructured groups? What is the fire that is producing so much smoke?

### WHAT HAPPENS IN UNSTRUCTURED GROUPS?

At the outset, the major compelling fact about an unstructured group is that it requires people to behave without knowing what is expected of them. It thus mobilizes in each individual the impulses, theories, and interpersonal skills that seem to him appropriate to make sense out of an ambiguous situation in which the only materials to work with are other human beings. How to relate to this fuzzy situation to make meaning of it is the key issue facing each group member. Each member is confronted, either consciously or subconsciously, with such questions as: "Should I attempt to lead toward something or should I wait and follow?" "Should I push for the familiar order of Chairman and use of Roberts Rules or should I wait to see what happens?" "How much should I tell them about myself?" "Shall I try to find out more clearly who these other people are?" "Should I resist the person who seems to be moving too fast or push the person who seems to be moving too slowly?" "Should I withdraw or proceed, listen or talk, joke or swear, comfort or punish, complain or suggest?"

What inevitably happens is that some members are silent, guarded, watchful, and some are competitive, controlling, aggressive. Some are logical, rational, steady, and some are emotional, anxious, volatile. Each member demonstrates in this situation a significant part of his own behavior and sees such demonstrations on the part of other members. Since a manager's own attitudinal and behavioral system is the central ingredient of his managerial role, he is thus given the opportunity to see his attitudes and behavior, and those of others,

played out in dramatic relief against the illuminating backdrop of an unstructured group.

In the interchanges that always ensue, a manager comes to discover more about himself and his theory and skills as a manager, and, through other group members, more about the reactions of human beings with whom he inevitably must work as a manager. He can see clearly illustrated, in interaction of which he is a part, some aspects of his self-motivation, something of the dynamics of others and of group processes that lie at the heart of his organizational and personnel responsibility as a manager. Because the behavior dynamics observable in an unstructured group contain most all the dynamic elements of all human groups, the lessons the participant learns can be applied in other group situations.

### EMERGENCE OF STRUCTURE

In an unstructured group, authority is deliberately diffused. The staff member does not typically assume any authority in the early stages of a group, or, if he does, he usually lets it go quite quickly. No clearly defined person is boss here. The person at first assumed to be boss (the staff member) will not act like a boss. There seems to be no clear cut locus of authority, so the group comes to grips right off with the problem of providing an authority structure. Structure always emerges. Some subgroup or some person appropriates or is endowed by the group with authority. Sometimes the particular structure that emerges succeeds; sometimes it fails. Exercise of authority always produces consequences; it is this cause and effect relationship between the exercise of authority structures and its consequences that becomes one of the principal subject concerns of the group.

To see structure built before your eyes and to see and feel the consequences of that structure is a unique experience, one that offers an unparalleled learning opportunity for managers. Although the manager at home deals

constantly with organizational structure and authority and the consequences of its exercise, he is rarely put in a position where he can come to appreciate as richly as in an unstructured group the relationship between structure, authority and the human consequences of its exercise. It is not too much to add that understanding and implementing the everchanging relationship between organizational structure and its consequences is the primary responsibility of management. This primary relationship is being studied by increasing numbers of managers in the dynamic fashion that characterizes its operation in life: in unstructured training groups.

### ESSENTIAL INGREDIENTS

All unstructured group training programs depend for success upon five minimum ingredients: *Interaction Experience*, *Participant Observation*, *Feedback*, *Conceptualization*, and *Staff Competence*.

1. *Interaction Experience*: Interaction always occurs among group members in the face of nonstructure. It is predictable that the pressures produced by silence and leadership abdication by training staff members will arouse sufficient anxiety in group members so that one member will begin to talk with others. As soon as one does, and it is usually quite soon, the group is off to the races. Once the first verbal stimulus is loosed, a continuous chain of interpersonal action and reaction is unleashed that will be ended only by the time limit of the training program.

The interaction of an unstructured group is a process that all members are caught up in, even those who try to withdraw or resist. Some people have tried consciously to remain aloof without success, but the human drive to influence the course of affairs to which one is a party is too strong. It leads even the most sophisticated and aloof to take part in shaping the group destiny in a way that makes best sense to him. The very lack of structure acti-

vates the impulse toward self preservation and provides as strong an energizer as a human group could have.

"Who's got the dice?" was the first phrase in one unstructured group that began the interaction process. The process had no trouble sustaining itself. So commonplace a thing as conventional introductions unprovided can lead to an immediate and frequently heated controversy over "whether or not we should introduce ourselves in the group." Since there is no subject matter predetermined, "what we talk about" often becomes a heated battleground. And, of course, once having decided what to talk about, an even more involving and explosive possibility can develop out of group consideration as to "how to talk about it" and/or "when to stop talking about it." All of these questions pale beside the basic challenge of "what are we here for?"

An unstructured group's attempt to define its own task, or its own goals, can precipitate conflict and interaction that is lively indeed. These issues, which may seem trivial to the reader, perform a vital function: they make interaction possible. Indeed they incite a most basic and vivid form of human dynamics.

2. *Participant observation*: When Person A cuts off Person B, this is always observed by others in a group, noted, and filed silently away in a storehouse of impressions. When Person C consistently either supports or opposes Person D on every issue this impression is also filed. As a matter of fact, if you are a member of an unstructured group, a dozen or so other people are constantly observing the way you sit and look, what you say and do; and in the process, they are developing some feeling, some evaluation, and some general reactions about you. In the meanwhile, you join everyone else in observing everyone else. And every member observes the group. If in the beginning, all the women are silent while all the men talk, this too is observed. Should someone dedicated to peace use a gift for blarney to

prevent any issue from joining or any conflict, this is sure to be noticed. So are the ones who do not talk or talk too little. So are the ones who talk too much. So are the clowns and the solid citizens, and the pessimists and the diehards and the blockers and the naive optimists and all the role-types known to every human group. So are the bids for leadership, direct and indirect. The practical men notice the men who generalize about principle, and vice versa, and each says to himself, "Oh, oh, we have to watch those boys." So everyone watches everyone else, except those he assesses as unworthy or too insignificant to watch—and those not being watched, being human and sensitive, are particularly likely to watch those not watching them.

At first you tend exclusively to watch others, but before long you begin also to watch yourself. You learn to observe cause and effect relationships in behavior, even when you are an active participant in the process. You are helped to become a diagnostician and an increasingly competent participant-observer through the subtle example of the trainer, who tends sooner or later to use himself as a diagnostician, and through the influence of theory sessions (outside the unstructured group) where you are systematically acquainted by staff members with a variety of diagnostic concepts and tools. This development of participant-observer skill is the second key ingredient making for success.

**3. Feedback:** Each member of an unstructured group must have the opportunity to learn from the observations of other group members by having these observations explicitly and directly stated (or fed back) to him. Group members must come to realize the reactions they have created in others, and the group must have the chance to learn which of its dynamics or procedures are effective and which are ineffective by pooling observations. Plural ignorance or misinterpretation is the consequence of lack of feedback.

There are two levels of feedback—individual and group. In individual feedback, if group members notice, for example, that one of their number seems to be suspicious of every suggestion made to move the group forward and that he continually doodles such things as puppets on a string or a large cat about to pounce on a small mouse, they may deliberately call this to his attention. Once he realizes what he has been doing, one block to group progress may have been removed. And, if through feedback he is helped to discover the impact of a persistently suspicious attitude, he may well be able to achieve a better relationship as a manager at home.

At a group level, if stalemate for the total group results from tight, competitive loyalty to subgroups and this observation can be fed back to them, the group is put in a position to set up corrective mechanisms designed to produce an identification with the whole group sufficient to achieve group movement.

A manager can learn a tremendous amount through his experience in an unstructured group, but not without benefit of feedback. It is this writer's view that the staff member in an unstructured group carries the responsibility to intervene, if necessary, at strategic points to suggest or demonstrate a methodology that will insure feedback of the pertinent impressions collected by members of the group as it proceeds.

**4. Conceptualization:** Useful, transferable, concept formation must follow from interaction, observation and feedback. Simply to have had an exciting or frustrating or stimulating experience in an unstructured group is not enough to make for a successful developmental experience. A manager must also be able to form clear concepts about his behavior and that of others which he can apply in other situations. The point of managers' learning about self, individual, and group dynamics in an unstructured arena is precisely that he can develop concepts which will provide guidance

for his behavior in structured on-the-job situations.

If a manager learns in his head and his viscera as a result of an unstructured group experience that "I have a tendency to control people and situations and this tendency makes many people mad and many situations relatively sterile," he has a concept that he can take home as a conscious guide for behavior in the future. Similarly, if a manager learns the hard way that "to force a decision and action with a significantly large group of concerned people uncommitted to it means trouble in the long run," he has a concept that may prevent for both him and his organization a great deal of administrative hell back on the job. If, as a result of taking a deviate position in the group, a manager feels the tremendous force of group pressure that comes to deviants, he is better able to develop concepts about deviants that may help him to handle creative deviation or originality so that it can be a source of positive energy to his organization.

**5. Staff Competence:** For the most part effective staff members are drawn from teaching faculties of educational organizations. They come largely from backgrounds in the social sciences, particularly educational, clinical, social or industrial psychology, and psychiatry and sociology. The universities and organizations previously mentioned are reservoirs of much staff talent. As might be expected, staff members who function well in unstructured groups, coming as they do from a variety of disciplines and backgrounds, differ somewhat in theory and practice.

One difference among trainers is the degree to which they intervene in the processes of a group. Another difference is in the kind of intervention they employ, all the way from explicitly stated interpretation of processes to pure reflection or description without any interpretation.

Trainers differ also in the relevant concepts they hold in what they see and how they feed

it back. Some see largely procedural or intellectual phenomena; some are mainly aware of emotional phenomena. Some are sensitive to a greater number of variables than others. Trainers, like all people, see what they are prepared to see and differ to some degree in their impact on a group and in their effectiveness as teachers. But because the persistent processes of unstructured groups themselves seem much more potent in contributing to the development of managers than do the idiosyncracies of trainers, tolerance for individual differences among trainers should be held very high.

Certainly there is an important lower threshold of trainer competence. The fact is that top rate staff for unstructured groups is in short supply, but the exact qualities for successful staff cannot be spelled out in a highly specific, assured way. Probably no one would quarrel with the notions that competent staff should have a wealth of psychological insight within a context of understanding the broad range of social sciences, that they be self-disciplined and relatively free of a drive to exploit a group for their own needs, that they have a high tolerance for ambiguity so that they themselves can sustain the uncertainty of an unstructured situation without prematurely spoiling it, that they be adequately verbal, that they be able at times to intervene when it becomes strategically necessary, that they be able to function rationally in the face of hostility and/or conflict focused upon them or loose in the group, that they have knowledge of a range of methods designed to result in learning and concept formation. It helps immeasurably to have staff who, when appropriately called upon, can convey concepts that give meaning to the unstructured experience in a simple, clear, intelligible fashion. The one thing that is catastrophic is a conscious or unconscious trainer disbelief in the ability of an unstructured group to achieve a positive result. Since genuine belief comes only through experience, it is desirable

that the staff members themselves have been participants in an adequate number of unstructured group experiences.

Interaction, participant observation, feedback, conceptualization, and staff competence are all necessary to the success of an unstructured group. It is a wonder that these essential ingredients seem to develop within a fairly wide range of staff-member viewpoints and behavior: regardless of their exact beginnings or of their trainers' theories and behavior, or of their particular constellations of personalities, unstructured groups all seem to end up with more or less similar results. This is not absolutely true, of course; there are varying degrees of effectiveness and success among groups, but it is amazing how similar are the courses of such varied groups. It is extremely difficult to ruin an unstructured group experience.

### COSTS AND VALUE

The training programs described here are costly—especially for residential programs. When you add travel costs to a room and board expense of approximately thirteen to twenty dollars per day per person for a period of several days to several weeks, to the salary costs of the key management personnel involved, to the consulting costs of competent staff, you come up with a sum that has always seemed quite high to organizational officials who have not participated in the experience. As a matter of fact, almost every one of the organizations mentioned in this document at first resisted this approach to management development because of the expense. But in every case cited here participants' enthusiastic endorsement has resulted in budgeting to continue this type of management development program.

There have been many attempts to measure

the value of this approach to management development in quantitative terms. There are such studies underway in almost every one of the organizations mentioned. The San Bernardino Air Force Materiel Command has done a series of four studies of their Leadership Training Laboratories which indicate a significant relationship between participation and changes in managerial behavior for the better, reported by both the participant-managers and their subordinates. Esso, Republic and other organizations have continuing studies underway and more research inevitably will be done, but the most impressive current level of proof is still to be found in the subjective experience of organizations and managers themselves.

At this stage in the development of management education, the increasing consensus that experience in unstructured groups contributes positively to the organizational psychological climate and to supervisory understanding and skill solidly supports growing use of the unstructured group as an instrument for managerial development.

### SUMMARY

The unstructured group as an instrument for management development is being used more widely all the time by large business, industrial, social, and governmental organizations. The tremendous impact of unstructured groups is due to the fact that they create an unparalleled opportunity for managers to "see" complex dynamics of interaction between and among self and others in a context of group organization. The chance to participate in, and observe, the dramatic development of structure as it emerges in an unstructured group, and to evaluate its consequences, offers the most pertinent kind of learning opportunity for managers.

THOMAS H. CARROLL

# Towards a Liberal Education for Business

*In response to demands from businessmen, educators, and social critics, the education of future managers is being broadened. Some concrete actions already taken are outlined below.*

Professional education for business is surely in ferment. Never before in its relatively short history have educators in this professional field been engaged in such a deep and widespread questioning of its educational goals and of the means for approaching their achievement as at present. Several factors account for this current ferment. First there is the growth in the size and complexity of business organization itself. Then there are significant external factors, such as the increasing impact of government and labor on business decisions. Finally, the development of a social environment that calls for increased public responsibility in business decision-making has placed new demands upon business leaders. It is the purpose of this paper to examine the concept of professional education for business that appears to be emerging.

When the first collegiate schools of business were established in the United States in the 1890's, their purpose was primarily to provide training for careers in accounting, purchasing or marketing. The curricula were designed to teach the techniques of the trade. Graduate schools of business came into existence after the turn of the century to provide training for business at the executive level; their curricula were directed toward the needs of administra-

tors rather than technicians. Training was provided for decision-making in the principal management functions—production, marketing and finance—but it was still predominantly training of a specialized nature. Although the business curriculum was not devoid of intellectual content, economics was the only basic discipline ordinarily included and the emphasis was principally on aspects of so-called “applied economics.”

In recent years there has been an increasing uneasiness with this view of the role of business schools. Business executives as well as business educators have come around to a belief that the business firm is the best place to learn “how-to-do-it” techniques, that the function of the business school is to provide an appropriate background to evolving careers in business. The fundamental question then becomes: How can the business schools best perform this function?

The Ford Foundation has been concerned with problems of business education since 1954 when its Program in Economic Development and Administration was established. For the past two years a comprehensive staff study of the adequacy of business school curricula has been under way as part of this program. Its director has been Professor R. A. Gordon, who

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has served as a Foundation staff member on leave from his faculty post at the University of California in Berkeley.<sup>1</sup> Dr. Gordon's group is focusing its attention on the adequacy of business school curricula to provide competence in business, broadly construed. They have found it necessary to re-examine the organization and functioning of the business firm in order to gain a more precise picture of the range of activities and responsibilities that are involved. Although the results of this study have not yet been published, the Foundation has had the benefit of progress reports as it has taken some steps to strengthen and expand the scope of education for leadership in business and industry.<sup>2</sup>

From time to time the question has been seriously put to us whether there is any function at all for business schools. If the purpose of a business school is simply to provide an appropriate background for careers in business, the argument goes, this might best be accomplished through a combination of a liberal arts education at college followed by on-the-job training. Those who hold this view refer to the types of technique taught in business schools with a vocational approach. They find it easy to demonstrate that these techniques are all too often some ten to twenty years behind those used in dynamic business enterprises. In comparison, they contend, a successful liberal arts training provides a person with the basic abilities and skills that can be applied to the changing needs and circumstances of his business career.

In his *The Aims of Education*, published in 1929, the great philosopher Alfred North

Whitehead gave a vivid description of the potential contribution of broad educational training to a business career. He stated, in part:

"Today business organization requires an imaginative grasp of the psychologies of populations engaged in differing modes of occupation; of populations scattered through cities, through mountains, through plains; of populations on the ocean, and of populations in mines, and of populations in forests. It requires an imaginative grasp of conditions in the tropics, and of conditions in temperate zones. It requires an imaginative grasp of the interlocking interests of great organizations, and of the reactions of the whole complex to any change in one of its elements. It requires an imaginative understanding of laws of political economy, not merely in the abstract, but also with the power to construe them in terms of the particular circumstances of a concrete business. It requires some knowledge of the habits of government and of the variations of those habits under diverse conditions. It requires an imaginative vision of the limits of human nature and of the conditions which evoke loyalty of service. It requires some knowledge of the laws of health, and of the laws of fatigue, and of the conditions for sustained reliability. It requires an imaginative understanding of the social effects of the conditions of factories. It requires a sufficient conception of the role of applied science in modern society. It requires that discipline of character which can say 'yes' and 'no' to other men, not by reason of blind obstinacy, but with firmness derived from a conscious evaluation of relevant alternatives."<sup>3</sup>

The president of a large company is quoted as saying he had fifty younger executives, each one well qualified in such fields as engineering, sales, accounting, and advertising, but not one of them ready to succeed him. When asked why, he replied that none of them knew enough

<sup>1</sup>The Carnegie Corporation has made a grant to Swarthmore College under which Dr. Frank Pierson, Professor of Economics, is conducting a related study of business education. This is one in the series of studies of professional education supported by that foundation.

<sup>2</sup>One progress report took the form of a talk by R. A. Gordon to the 1958 Annual Meeting of the American Association of Collegiate Schools of Business. This was published in the *California Management Review*, I, 1, under the title "Some Current Issues in Business Education," Fall, 1958, 56-67.

<sup>3</sup>Alfred North Whitehead, "Universities and Their Function" in *The Aims of Education and Other Essays* (New York: Macmillan, 1929), pp. 141-42.

about public affairs, or national and international affairs. Worse than that, he believed that "none of them has a framework or a scheme of values against which to cast and evaluate the needed knowledge." And he stated further, "worst of all, none of them seems to realize that he lacks anything."<sup>4</sup>

However, it is one thing to say that liberal arts training is *desirable* and quite another to say it is *enough*. Professional orientation is needed as well; and an educational experience that is specialized in focus is needed for professional orientation. Although the requirements of leadership in industry are broad, specialization is still needed at the lower and intermediate levels; an individual ordinarily begins his business career as a specialist, e.g., in the laboratory or in a functional department, such as marketing. This undoubtedly is the explanation for the phenomenon which William Whyte observes in his book, *The Organization Man*: "Between 1953 and 1956 the number of business speeches bewailing over-specialization increased. So did the demand for specialists." In other words, specialization becomes less and less adequate as the individual advances toward greater and greater executive responsibility.

It does not follow that the specialist may not also be well educated. As W. E. Phillips, Chairman of the Board of Governors of the University of Toronto, has stated: "There is a widespread feeling that specialists cannot be well educated, that the nature of their training prevents them from being intellectually curious, imaginative, and interested in the work of others. This view is untenable: nearly all well educated persons are, in the last analysis, specialists . . ."<sup>5</sup>

What we must seek is the optimum combination of liberal education with specialization. Many thoughtful persons believe that the highly preferred preparation for a business career is a

liberal arts program at the undergraduate level followed by *effective specialization* at the post-bachelor, professional level. But it is idle to hope that this will be the pattern of education for the great mass of business graduates in the foreseeable future. Undergraduate programs in business appear to be here to stay. Accepting this, it has been and is our aim at The Ford Foundation to help strengthen and liberalize them.

Many college graduates have experienced the fact that liberal arts subjects can be taught in an illiberal or merely informative way. Similarly many college graduates know from experience that business subjects can be taught in a liberal way. Indeed the way in which a course is taught is *the* critical factor. On the one hand, for example, a course in business law can become a means for transmitting a set of legal rules or it can be used as a truly liberating vehicle in education with emphases on moral and ethical values as they are applied by individuals in the business setting. On the other hand, as Peter Drucker has pointed out: "It can be said with little exaggeration that of the common college courses being taught today, the ones most nearly vocational as preparation for management are the writing of poetry and short stories."<sup>6</sup>

Liberal arts colleges frequently offer courses in the field of business. All too often such courses are limited in perspective and represent neither satisfactory undergraduate education for careers in business nor adequate liberal education.

The Foundation has supported two attempts to explore approaches to the optimum combination. They come at the problem from opposite directions. The School of Business at Northwestern University is attempting to integrate the relevant social sciences and humanities into its undergraduate business curriculum. Grinnell College in Iowa is experimenting with the development of a small group of business

<sup>4</sup> Robert A. Goldwin and Charles A. Nelson, editors, *Toward the Liberally Educated Executive* (New York: Fund for Adult Education, 1957), pp. 75-76.

<sup>5</sup> "From the Board Room Window," *The University of Toronto Quarterly*, July, 1957, p. 500.

<sup>6</sup> Peter Drucker, *The Practice of Management* (New York: Harper and Brothers, 1954), p. 375.

courses suitable in nature and content for a liberal arts curriculum. These deal with business broadly as a basic institution of society.

Graduate schools of business face curriculum problems of a different kind. They are in a position to presume a certain minimum liberal arts training. The Gordon group has observed that the separately established, so-called graduate schools of business are looking with increasing disfavor on an undergraduate concentration in business administration as a background for their post-bachelor level programs. The Graduate School of Business at Stanford University has recently indicated that for persons with undergraduate majors in business administration "special permission will be required for admission." The problem of the professional graduate school is to determine what range of subjects provides the most appropriate training for a business career.

The relevance of economics has always been apparent; indeed, business administration is still sometimes thought of as synonymous with applied economics. More recently, however, there has been a growing awareness of the relevance of other disciplines, such as the behavioral sciences and mathematics. This has been reflected, on the one hand, in the appointment to professional business faculties of persons whose advanced training has been in mathematics, statistics or a social science other than economics and, on the other hand, in the encouragement of outstanding persons in these disciplines to engage in research on important business problems without making any shift in institutional domicile.

Through its Program in Economic Development and Administration, The Ford Foundation has played a role in these developments. It has encouraged the integration of the social sciences and mathematics with business administration in a number of ways. In its 1955 grant to the Harvard Business School to modify and expand the doctoral program, provision was made for the establishment of a visiting

professorship in the social (behavioral) sciences to further their applications to business administration. (The first incumbent of this chair was Dr. Samuel Stouffer, Professor of Social Relations at Harvard, and the second was and is Dr. Ray Bauer, formerly Associate Professor of Social Psychology at Massachusetts Institute of Technology.) Second, major support was given to Carnegie Institute of Technology for expansion of the doctoral training program of its Graduate School of Industrial Administration. The distinctive feature of this program is the emphasis on the application of the behavioral sciences and mathematics to problems of administration.

In its program planning for the year 1957-58, the Foundation decided to accelerate temporarily its efforts to strengthen business education. Support was given to the University of Chicago for its redevelopment program under the leadership of its new dean, Allen Wallis. The Chicago program is a pioneering one, strongly oriented toward the *utilization* of the social sciences in the analysis of problems of business administration.

In addition, a multiphase program designed to improve business education generally through the increased application of the social sciences, mathematics, and statistics to business problems has been carried out. In one phase of this program three social scientists were commissioned to make surveys of the relevance of research and methodology in their particular disciplines to business problems. They are Professor Paul Lazarsfeld of Columbia in sociology, Professor Mason Haire of the University of California at Berkeley in psychology, and Professor Robert Dahl of Yale in political science. These surveys will be published as review articles in the appropriate professional journals. They will also be reprinted in a brochure for distribution to faculty members and graduate students in business schools and social science departments.

In another phase of the program, three-year

visiting professorships in the social sciences, applied mathematics, and statistics have been established at five business schools—Indiana University, Michigan State University, the University of North Carolina, the University of Washington, and the University of Wisconsin.

Third, fellowships have been established for selected business school faculty members to pursue a self-defined course of study up to one full year in duration in the social sciences (other than economics), statistics, and/or mathematics. Preference is given to faculty members who are actively involved in the development of new teaching materials, courses and curricula, or in imaginative research. Fellowships are also being offered to selected faculty members in the fields of sociology, anthropology, psychology, or political science for research on problems of the business firm. Preference is given to those whose research record indicates a continuing interest in the analysis of the internal or external relationships of business firms, or who indicate a close relationship between their previous research interests and related areas of business study.

Fourth, "master fellowships" have been awarded to ten outstanding professors in graduate faculties of sociology, psychology, and political science whose research interests are oriented toward problems of business administration. Part of each five-year fellowship is designated for the support of graduate students selected by the professor, preferably doctoral candidates working on their dissertations. The remainder provides modest research funds for discretionary use to enable the professor to carry on his own research on business-related problems. It is hoped that this phase of the program will prove fruitful both in stimulating the work of the professors receiving grants and in encouraging able graduate students in the social sciences to pursue their dissertation research in business-related areas. It is a further hope that at least some of these students will join business faculties.

Fifth, a national doctoral dissertation competition has been established providing for the selection and the publication of the outstanding doctoral dissertations on subjects applicable to business problems. These are open not only to doctoral candidates in business schools but also to candidates in the social sciences and other fields pursuing dissertation work in areas directly relevant to business administration.

The Ford Foundation's professional staff has explored possible activities designed effectively to develop the use of quantitative methods in the business curriculum. It is well known that the use of modern mathematics and statistics in industry, aided by the development of high-speed computers, has grown at a phenomenal pace in recent years. Typical of the new techniques are mathematical programming, operational gaming, and computer simulation. After extensive consultation, the Foundation has decided to make a major investment in an effort to enable business educators to incorporate appropriate mathematical and statistical techniques in their teaching and research. The establishment of an Institute in Basic Mathematics for Application to Business has recently been announced. The Institute will be located in Cambridge and Professor Howard Raiffa of the Harvard Business School and the Harvard Department of Statistics will serve as its academic director.

The staff of the Institute will be drawn from a number of universities and from research staffs of business firms. It will consist of persons who are not only authorities in their fields, but who have proved their ability to communicate mathematical concepts and techniques to non-specialists. Forty business school faculty members have received appointments as Fellows of the Institute. In the selection, priority was given to faculty members who are active in creative research in one or more phases of business education, such as accounting, business economics, business statistics, business policy, finance, marketing, personnel, and pro-

duction management. There are no specified prerequisites relating to knowledge of or training in mathematics. The objective is *not* to turn all business education into an "operations research" or "management science" mold but rather to incorporate these methods, wherever appropriate, in the functional fields of business.

The Institute will run for about twelve months starting in September 1959. Fellows were selected from candidates nominated upon invitation to schools that are members of the American Association of Collegiate Schools of Business. The response to this program has exceeded the most enthusiastic expectations. Indeed, there were numerous requests to be considered from faculty members in economics and other social sciences who were not eligible. The program should be a most challenging and rewarding educational experience for the participants and the impact on the field should be immediate and profound.

The introduction of mathematics and the behavioral sciences into the business curriculum is part of the general process of liberalizing business education. Another way in which liberalizing forces have manifested themselves is the reduction in the excessive proliferation of specialized courses. The trend is toward fewer courses of a more fundamental nature. Let us hope that curricula of the future will offer no more college credit courses on drug store accounting, basic radio announcing, and the like. The typical curriculum might well be organized around a few broad subject areas such as industrial management and production, communication theory and organizational behavior, and quantitative methods.

A necessary concomitant of the liberalizing process is the development of basic research in business administration. The movement away from the vocational approach in teaching has been accompanied by a movement away from research which concerns itself chiefly with description of present business

practice. The trend in the leading schools is toward increased rigor in analysis with the aid of the concepts and techniques of all the underlying disciplines. Examples include the application of statistical theory, organization theory and operations research to decision-making. As a result, business schools may be expected to contribute toward the improvement of business policy and practice—to lead, not to follow, business.

The evolution of a body of theory is already discernible that may lead eventually to a unified theory of the firm and its management. This goal has been well stated by Professor Jay W. Forrester, an M. I. T. engineer-scientist who has turned his attention to the application of electronic computer techniques to industrial dynamics:

"To develop the status of a profession, management must discover the underlying principles which unify its separate aspects. It must develop a basic theory of behavior. It must learn how to convert experiences and particular case examples into a contribution to this general theory. And, finally, it must be able to employ the basic principles of the theory as a useful, practical guide for explaining and solving new problems as they arise. By accomplishing these aims, management will become a true profession during the next generation."

Business scholars have already made considerable progress toward this goal. The future holds promise of even greater achievements. In the pursuit of this goal the antithesis between specialization and liberal education may be eliminated. It has even been suggested that technology and its administration may become the core of a new twentieth-century humanism.<sup>7</sup> Be that as it may, business education can and should be made the vehicle for liberal as well as specialized or professional education.

<sup>7</sup> Jay W. Forrester, "Industrial Dynamics—A Major Breakthrough for Decision Makers," *Harvard Business Review*, July-August 1958, p. 37.

<sup>8</sup> Sir Eric Ashby, *Technology and the Academics* (New York: Macmillan, 1958), p. 85.

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# Some Uses of Model Prototypes in an Operations Research Study<sup>1</sup>

*Two top authorities explain the concept of prototype mathematical models by means of detailed examples. This article is strongly recommended for those who are seriously interested in the newer quantitative aids to management decision-making.*

Management planning problems are often so huge and unwieldy that it is necessary to attack them with a variety of devices. One strategy involves the use of model types and prototypes. This is the topic which will be discussed in this paper in the context of a long-range oil field development problem, one which has aspects that are common to many attempts at long-range facilities planning. The emphasis will be on concepts, however, rather than the details of the actual problem and even these concepts will be dealt with in broad fashion. Further de-

tails, if wanted, may be found in the materials cited in the bibliography. (See, e.g., reference 2 at the end of this article.)

## THE USE OF PROTOTYPES: OIL FIELD PIPELINER MODEL

Most management planning problems that have been encountered in OR (operations research) work, at least to date, appear to have very definite structural features which can be used to advantage in mathematical manipulation and analyses. Even very large problems appear to be composed of a series of smaller inter-related problems (or models) each with a very definite structure which can be approximated by more or less standard types of models. This is fortunate because it allows access to efficient methods of solution of each of the parts in ways which can then be synthesized into a total solution. It also allows the use of simpler "prototype models" of actual parts of the problem when new methods of solution are required.

<sup>1</sup>This article was delivered as a paper at the 11th Annual Industrial Engineering Institute, University of California, Berkeley and Los Angeles, February 6, 7, 1959. Part of the research underlying this paper was undertaken for the project *Temporal Planning and Management Decisions under Risk and Uncertainty* at Northwestern University and part for the project *Planning and Control of Industrial Operations* at Carnegie Institute of Technology. Both projects are under contract with the U. S. Office of Naval Research. Reproduction of this paper in whole or in part is permitted for any purpose of the United States Government. Contract Nonr-1228(10), Project NR 047-021 and Contract Nonr-760 (01), Project NR-047011.

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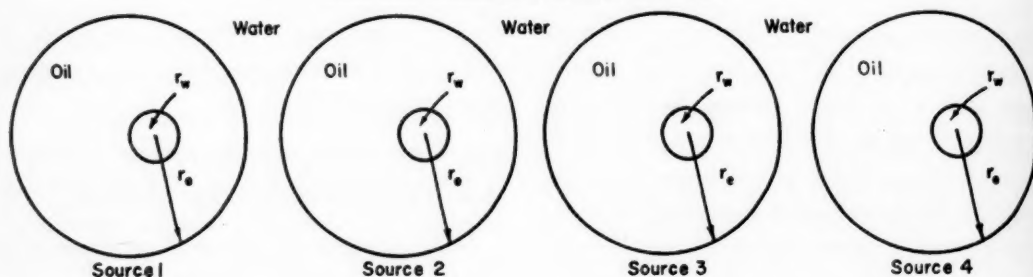
These prototypes—or mockups—are designed to preserve essential features of the relevant elements of structure while eliminating the welter of detail which encumbers the actual problem.

The case at issue concerns long-range planning for capital development, exploration and operation of a large oil field. Figure 1 below is intended as a schematic portrayal to guide the synthesis of a prototype for one part of the actual problem. This is the problem of operating wells already in place and the figure represents an idealization of even this part of the total problem. Nevertheless it incorporates some of the essential structural features which are important in their bearing on the total

problem. The prototype, as will shortly be seen, makes it possible to study the structure associated with certain kinds of non-linearities that are present even when this relatively simple situation is assumed.

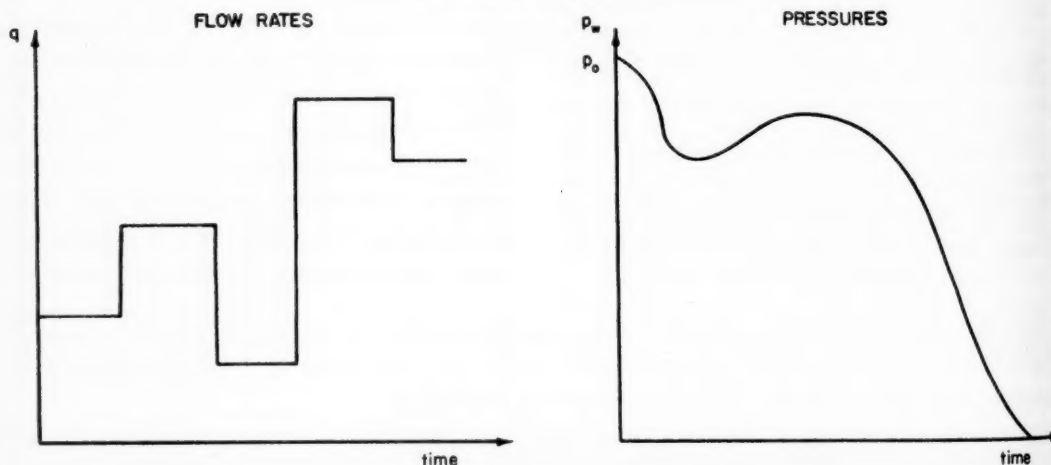
In the present example each of the four wells is already in place and each well is in a separate field—called sources 1, 2, 3, and 4—which are sufficiently far removed from each other so that flow reactions between wells can be ignored. Each well radius,  $r_w$ , is assumed to be small relative to its reservoir radius,  $r_e$ , and the possible pressure-flow reactions are assumed to be known (to a sufficient degree of approximation) so that they may be plotted as in Figure 2.

FIGURE 1  
SCHEMATIC DIAGRAM OF RESERVOIR SYSTEM<sup>1</sup>



<sup>1</sup> Adapted from A.S. Lee and J.S. Aronofsky, "A Linear Programming Model for Scheduling Crude Oil Production", a paper presented at the fall meeting of the Society of Petroleum Engineers of AIME in Dallas, Texas, Oct. 7, 1957.  
(Dallas: Magnolia Petroleum Company Field Research Laboratory)

FIGURE 2  
PRESSURE-FLOW REACTIONS



Suppose now that it is desired to plan the flow of oil from these four wells into a pipeline of known capacity. Account must then be taken of the nonlinear relation between flows and pressures, or else expenditures must be undertaken (e.g., via pumps, water injection wells, etc.) to preserve the wells from the potential pressure drops associated with the flows. For in a free-flowing well the flow rate,  $q$ , is a function of the pressure,  $p_w$ , which, in turn, depends on previous flow rates as well as the initial pressure,  $p_0$ , in the well. Allowance must also be made for the fact that too rapid flows may cause the oil-water interface to sweep through the well, and so on.

To the degree of knowledge usually available it is possible to employ certain kinds of transformations and approximations with satisfactory results. The following precautions are the chief ones to be observed: The time grid must not be cut too fine if leads and lags in pressure-flow reactions are to be avoided. Also various constraints must be introduced to avoid possible nonsense results as when, for example, too rapid withdrawal causes the oil to cease flowing.

The hypothetical prototype which emerges from these (and like) considerations is shown in Table 1. Each subset of four constraints among the first sixteen shows the pressure drop relations for each well in each of the four fields. With each of the columns labelled  $P_1, P_2, \dots, P_{16}$  are associated the respective flow variables,  $q_1, q_2, \dots, q_{16}$ , whose values are to be scheduled. Profits per barrel that might be earned by each well in each period are shown at the top of  $P_1, P_2, \dots, P_{16}$ . For instance,  $q_1$  is a variable whose value, when determined, prescribes the flow rate from source 1 in period 1. It is associated with column  $P_1$  and is assigned an earning rate of \$.80 per barrel.

Now note that each unit of  $q_1$  withdrawn causes a pressure drop which affects the flows  $q_2, q_3$ , and  $q_4$  which are possible for the first

source in the next 3 periods. This is handled in the model by subtracting .00057  $q_1$  from the 900 units of pressure which appears in the second row under  $P_0$ . That is,  $q_2$  is limited to the amount  $900 - .00057 q_1$  which becomes smaller as  $q_1$  is increased. Thus the column headed  $P_0$  contains the initial pressure adjusted for minimum pressures to be maintained. The first four rows are applicable to source 1, the next four to source 2, and so on through the first 16 rows for the 4 sources which are available. Each of the next four rows stipulates the maximum amount of oil believed to be in place at each source. The final four rows show the pipeline capacity available for servicing the four fields together. The problem is to plan the production which maximizes total profits over the four-period horizon, considering all of the available alternatives which the specified conditions allow.

## MODEL TYPES

It will now be shown how this "pipeliner model" may be transformed—to a suitable degree of approximation—to a standard type which has come to be called by the name "transportation type model."

As the name suggests, this model was originally devised for planning the shipment of goods from certain prescribed origins to selected designations in order to minimize the total cost of transport. But this same model type has been found applicable to a variety of other situations which includes loading machines, assigning personnel to jobs, etc. An advantage may be obtained by using this model type as a guide towards decompositions and transformations in that research (undertaken by various persons) has provided extremely efficient methods of computation and analysis for handling all problems which can be put in this form.

The data applicable to the first well in all four periods may be used to illustrate the kind

TABLE 1  
A FOUR-FIELD PIPELINER MODEL, 1 WELL PER FIELD

ROWS	C	P <sub>0</sub>	.80 P <sub>1</sub>	.76 P <sub>2</sub>	.72 P <sub>3</sub>	.65 P <sub>4</sub>	.76 P <sub>5</sub>	.72 P <sub>6</sub>	.68 P <sub>7</sub>	.60 P <sub>8</sub>	.72 P <sub>9</sub>	.67 P <sub>10</sub>	.60 P <sub>11</sub>	.50 P <sub>12</sub>	.60 P <sub>13</sub>	.58 P <sub>14</sub>	.56 P <sub>15</sub>	.54 P <sub>16</sub>
1		900	.01677															
2		900	.00057	.01677														
3		900	.00033	.00057	.01677													
4		900	.00023	.00033	.00057	.01677												
5		1200					.04855											
6		1200					.00177	.04855										
7		1200					.00096	.00177	.04855									
8		1200					.00072	.00096	.00177	.04855								
9		1300									.10650							
10		1300									.00400	.10650						
11		1300									.00230	.00400	.10650					
12		1300									.00150	.00230	.00400	.10650				
13		1800													.00152			
14		1800													.000048	.00152		
15		1800													.000028	.000048	.00152	
16		1800													.000021	.000028	.000048	.00152
17		27700	1	1	1	1												
18		11100					1	1	1	1	1	1	1	1	1	1	1	1
19		33000																
20		483300																
21		20000	1															
22		20000		1														
23		20000			1													
24		20000				1												

SOURCE: DATA SUPPLIED BY CARL GUENTHER

of approximating procedure that may be employed. The pressure conditions which  $q_1$ ,  $q_2$ ,  $q_3$  and  $q_4$  are required to obey may be written in the form

$$(1) \quad \begin{aligned} .01677 q_1 &\leq 900 \\ .00057 q_1 + .01677 q_2 &\leq 900 \\ .00033 q_1 + .00057 q_2 + .01677 q_3 &\leq 900 \\ .00023 q_1 + .00033 q_2 + .00057 q_3 + .01677 q_4 &\leq 900 \end{aligned}$$

where the symbol " $\leq$ " means "less than or equal to." Thus, referring to the first of these expressions,

$$(2) \quad q_1 \leq \frac{900}{.01677} \doteq 53.7 \times 10^3$$

means that  $q_1$  may be any figure (for the planned rate) which does not exceed the numerical value shown on the right. In addition,  $q_1$ —like  $q_2$ ,  $q_3$  and  $q_4$ —cannot be negative so the solution must also satisfy

$$(3) \quad 0 \leq q_1.$$

Now if  $q_1$  is assumed to be maximal—viz.,  $q_1 = 53.7 \times 10^3$ —and this value is substituted in the second expression in (1) then

$$q_2 \leq \frac{900 - .00057 \times 53.7 \times 10^3}{.01677} \doteq 51.9 \times 10^3$$

(to slide rule accuracy) is obtained as the limiting value for  $q_2 \geq 0$ .

Continuing in this manner the expression (1) may be replaced by the conditions

$$(5) \quad \begin{aligned} x_1 &\leq 53.7 \times 10^3 \\ x_2 &\leq 51.9 \times 10^3 \\ x_3 &\leq 50.8 \times 10^3 \\ x_4 &\leq 50.1 \times 10^3 \end{aligned}$$

where the variables  $x_1$ ,  $x_2$ ,  $x_3$ ,  $x_4$  are used in place of the original  $q_1$ ,  $q_2$ ,  $q_3$ ,  $q_4$  to serve as a reminder of the approximating assumption.

Similar results will be achieved when  $q_5$ ,  $q_6$ ,  $q_7$ ,  $q_8$  are replaced by  $x_5$ ,  $x_6$ ,  $x_7$ ,  $x_8$  and when  $q_9$ ,  $q_{10}$ ,  $q_{11}$  and  $q_{12}$  are replaced by  $x_9$ ,  $x_{10}$ ,  $x_{11}$  and  $x_{12}$ , etc. It need only be noted that the method of approximation does yield a pattern of possible well flows. Hence, if this is found to be optimal it may be put to immediate use. If

it is not optimal it will either (a) provide an efficient advanced start towards the actual optimum or (b) it might be found (by known methods) to be close enough to an optimum to be justifiably used as a solution.

Now statements of the form (5) are also frequently encountered in management planning practice. An example is found in the so-called "balance restrictions" which frequently enter into the planning of mixes and volumes for manufacturing operations. In linear programming, this feature of the model—i.e., the balance restrictions—is said to be in "bounded variables form" and hence susceptible to efficient methods of compression and solution by means of what are called "bounded variables techniques."

There is, of course, no reason why the methods of transportation programming can-

not be joined to the bounded variables techniques for a combined attack on the "pipeline" or other problems. In fact, a working format for such calculations is shown in Table 2. Here the reservoirs (rows 1, 2, 3 and 4) serve as origins and the time periods (columns 1, 2, 3 and 4) serve as destinations. The oil in place in each reservoir—drawn from rows 17–20 inclusive in Table 1—are shown as the

amounts available opposite each origin in the right-hand column of Table 2. The pipeline capacity (20,000 bbls. per period) is drawn from rows 21–24, inclusive, of Table 1 and entered at the foot of each column in Table 2. Finally,  $\phi(T)$  represents a "phony time period" which allows for slack in each reservoir. This slack represents oil not withdrawn (i.e., oil left in place) in any of the four periods

TABLE 2  
WORKING FORMAT FOR COMBINED  
TRANSPORTATION AND BOUNDED VARIABLE TECHNIQUES

Time Res.		1	2	3	4	$\phi(T)$	
1		53.7 /	.80 51.9	.76 50.8	.72 50.1	.65	0 27.7
2		23.6 /	.76 24.3	.72 23.8	.68 23.4	.60	0 11.1
3		7.69 /	.72 7.59	.67 7.43	.60 7.31	.50	0 33.0
4		119.0 /	.60 81.4	.58 71.5	.56 68.8	.54	0 483.3
$\phi(q)$			0	0	0	0	0 80.0
		20.0	20.0	20.0	20.0	555.1	

All values except profitability factors are in terms of thousands.

in any reservoir. Similarly  $\phi(q)$  represents pipeline slack, or unutilized capacity in those periods where it is not maximally profitable (over-all) to use all of the available capacity.<sup>2</sup>

The figures which appear within the upper right-hand squares in each cell are the profits per barrel which were previously shown at the top of the columns in Table 1. Thus the \$.80 previously associated with  $P_1$  now appears in the cell for reservoir 1—time period 1 where the amounts  $q_1$  are to be entered. Notice that each square under  $\phi(T)$  and opposite  $\phi(q)$  is assigned a profit of \$0 per unit (as noted in the pertinent square). Slack cannot return a profit directly but may help to increase total profit by making opportunities available elsewhere in the system.

Finally, the figures in the triangles represent the bounds (or upper limits) to maximum withdrawal in each reservoir in each period. For instance, the figures 53.7, 51.9, etc., shown in the first row are the bounds which were calculated for reservoir 1 and displayed in the expressions (5). The other bounds were similarly derived.

It is not necessary to go into the technical details of a transportation type—bounded variables calculation since these are discussed elsewhere. (See 2 in the bibliography.) Simply to complete the discussion an initial trial solution and a final solution to the problem of Table 2 are given in Tables 3 and 4, respectively. To be sure, the program shown in Table 4 is not an exact optimum but it can be shown (as in the article just cited) that the return of \$53,995 for the program of Table 4 is within a few hundred dollars of the exact optimum so that further computations are not really worthwhile. Thus the program  $q_1 = 12.11 \times 10^3$  bbls.,  $q_2 = 1.31 \times 10^3$  bbls., etc., may be accepted as

<sup>2</sup> To balance the table the sum of the reservoir availabilities,  $551.1 \times 10^3$  bbls., is entered under  $\phi(T)$  and the sum of the pipeline capacities  $80 \times 10^3$  bbls. is entered opposite  $\phi(q)$ . This is, however, a technical detail and need not be entered into here other than to note that it can always be arranged. See reference 2 in the bibliography.

an optimum since—as remarked at the outset of this section—the approximations assured that the planned flows would be within the bounds of pressure feasibility established by the upper limits in each cell.

## FUNDS-FLOWS AND RATE OF RETURN CALCULATIONS

The preceding example showed how the problem of scheduling well flows into a pipeline could be replaced by a certain kind of transportation model which was expeditiously solved. Of course, only a prototype was involved. Nevertheless, the method perfected for the prototype proved to be capable of considerable extension which allowed for (a) well-interactions, (b) pressure maintenance, and (c) facilities installations such as processing plants, pipe- and flow-lines, water injection plants, etc.

Actually, the problem of perfecting a means for programming to minimum capital and operating costs (while allowing for contingencies) over a considerable period of time was only one focus of the study. Another focus involved the synthesis of a means for evaluating alternate patterns of development so that management might be guided in such assessments as it wished to make of major company objectives.

Attention will now be turned to this feature of the study in order to illustrate one further use of prototypes. Here the objective is to evaluate the rates of return—which might then be matched with subjective assessment of the attendant risks—involved in alternate courses of action over an extended period of time. To point up the issues, the question of risk will be left aside. Attention may then be centered on the opportunity costs involved in committing funds to various patterns of investment at different rates of return.

Three crucial questions must be answered when attempting to reach a rational answer for any business investment decision. These

questions are (1) whether to invest, (2) how much to invest and (3) when to invest. As is well known, many devices which balance the niceties of exact (but involved) methods of computation against the need for an expedient and understandable method of reaching a solution have been devised by managements concerned with such planning problems. "Bogey" rates of return and payoff periods have been utilized for screening investment candidates.

More sophisticated attempts have involved the use of compound accumulation rates based on an assumed market rate of interest. Still more sophisticated devices waive the latter approach in favor of an order-of-priority schedule, these priorities holding only up to some cut-off point determined by the availability of funds for investment.

All of these devices utilize, in one form or another, the idea of "opportunity cost" cal-

TABLE 3  
INITIAL TABLEAU

		1	2	3	4	5		
$R_i \backslash K_j$		.71	.67	.56	.54	0		
1	.09	53.7 20	.80 51.9 7.7+	.76 50.8 ✓	.72 50.1	.65	0	27.7
2	.05	25.6	.76 24.3 11.1	.72 23.8	.68 23.4	.60	0	11.1
3	0	7.89	.72 7.59 1.2-	.67 7.43	.60 7.31	.50	0	33.0
4	0	11.90	.60 8.14	.58 7.15 12.57+	.56 6.88	.54	0	483.3
5	0	0	0	0	0	0	0	80.0
		20.0	20.0	20.0	20.0	555.1		

All values except profitability factors are in terms of thousands

culations. For instance, the use of a market rate of interest implicitly assumes that funds may be borrowed or lent at the prescribed rate. The discounting mechanism then prescribes that investments should not be made, even if the return is positive, because a better opportunity will be lost because (by assumption), the funds could have earned the "going rate of interest."

Attempts at exact answers even to individual investment decisions can require recourse to intricate nonlinear mathematical expressions.

In the present case, the matter was further complicated by the need for considering all of the investments (now and in the future) simultaneously, while allowing for cash disbursements, realization and operating expenses under various lead-lag patterns. Qualitative as well as quantitative aspects of credit and cash commitments also required consideration.

To study possible approaches to this problem, recourse was had to a prototype which would incorporate the following features: (1) a lag would be encountered in every purchase-

TABLE 4  
AN OPTIMUM PROGRAM

		1	2	3	4	5		
$R_i \backslash K_j$		.68	.64	.60	.54	0		
1	.12	12.11	1.31	14.28			27.7	
2	.08		11.10				11.1	
3	0	7.89	7.59	5.72		11.80	33.0	
4	0				20.00	463.30	483.3	
5	0					(80.00)	80.0	
		20.0	20.0	20.0	20.0	555.1		

sale transaction, (2) a distinction would need to be made between accrued and realized profits and costs, (3) an opportunity for evaluating proposed facility alterations would be present and (4) a pattern of varying prices and acquisition costs would be involved. Finally, a cash restriction would be introduced which would make it possible to evaluate the costs and benefits associated with decreasing or increasing the amount of cash available for optimal deployment.

### A SIMPLE WAREHOUSE MODEL

For this purpose a prototype was synthesized from the classical "warehousing model" of linear programming by doctoring and extending it in a variety of directions. The simplest kind of warehousing model covers the planning of purchases, sales, and storage patterns for a single commodity under known prices over an "horizon" of  $j = 1, 2, \dots, n$  periods. To show what such a model looks like the following symbols are needed:

- $B$  = the fixed warehouse capacity  
 $A$  = the initial stock of inventory  
 $x_j$  = the amount to be purchased in period  $j$   
 $y_j$  = the amount to be sold in period  $j$   
 $p_j$  = sales price per unit prevailing in period  $j$   
 $c_j$  = purchase price per unit prevailing in period  $j$ .

The problem at issue may then be stated as follows: Given the  $p_j$  and  $c_j$  how should this firm program its activities—i.e., determine values  $x_j$  and  $y_j$ —in order to maximize its profits?

Thus, if  $z$  is total profit, then the firm wishes to maximize

$$(6.1) \quad z = p_1 y_1 + p_2 y_2 + \dots + p_n y_n - c_1 x_1 - c_2 x_2 - \dots - c_n x_n$$

or, in more compact mathematical notation:

$$(6.2) \quad \text{maximize } z = \sum_{j=1}^n p_j y_j - \sum_{j=1}^n c_j x_j$$

where (6.2) has the same meaning as (6.1).

Now in the first period the net warehouse capacity is  $B - A$ . If it sells an amount  $y_1$ , the firm can create additional capacity, but in any event it can buy only up to the net storage limit. Hence

$$(7.1) \quad x_1 \leq B - A + y_1$$

or

$$(7.2) \quad x_1 - y_1 \leq B - A$$

limits the amount it can buy in period 1. Similarly, in period 2

$$(8.1) \quad x_2 \leq B - A + y_1 + y_2 - x_1$$

or

$$(8.2) \quad x_1 + x_2 - y_1 - y_2 \leq B - A.$$

More generally, in period  $i$  it can buy up to

$$(9.1) \quad x_i \leq B - A + y_1 + y_2 + \dots + y_i - x_1 - x_2 - \dots - x_{i-1},$$

so that,

$$(9.2) \quad \sum_{j=1}^i x_j - \sum_{j=1}^i y_j \leq B - A$$

gives the general form of the buying constraints for each period  $i = 1, 2, \dots, n$ .

The firm can sell only from already acquired inventory so that in period 1,

$$(10.1) \quad y_1 \leq A$$

while in period 2:

$$(10.2) \quad y_2 \leq A - y_1 + x_1$$

where  $x_1$  is the amount added to inventory by period 1 purchases. The expression (10.2) can evidently also be written

$$(10.3) \quad -x_1 + y_1 + y_2 \leq A.$$

The general expression for these sales constraints is then seen to be

$$(11) \quad -\sum_{j=1}^{i-1} x_j + \sum_{j=1}^i y_j \leq A$$

for each of the  $i = 1, 2, \dots, n$  periods.

Written out in extended detail the  $n$  expressions (9.2) and the  $n$  expressions (11) appear as follows:

Buying Constraints:

$$\begin{array}{lll}
 x_1 & - y_1 & \leq B - A \\
 x_1 + x_2 & - y_1 - y_2 & \leq B - A \\
 \dots & \dots & \dots \\
 x_1 + x_2 + \dots + x_n - y_1 - y_2 - \dots - y_n & \leq B - A
 \end{array}
 \tag{12.1}$$

and

Selling Constraints:

$$\begin{array}{lll}
 & y_1 & \leq A \\
 -x_1 & + y_1 + y_2 & \leq A \\
 -x_1 - x_2 & + y_1 + y_2 + y_3 & \leq A \\
 \dots & \dots & \dots \\
 -x_1 - x_2 - \dots - x_{n-1} + y_1 + y_2 + y_3 + \dots + y_n & \leq A
 \end{array}
 \tag{12.2}$$

An easy way to remember how these expressions are formed and, simultaneously, to display the structure of the model in a rather striking manner is obtained by the schematic arrangement in Figure 3. It will be recalled that the expressions (1) were formed from Table 1 by dropping the variables  $q_j$  alongside the numbers directly below them and forming an inequality for each row and the same procedure can be followed for the variables  $x$  and  $y$  in this case. For the simple warehouse model the non-zero numbers (which serve as coefficients in the resulting expressions) are all either +1 or -1. These +1 and -1 values are arranged in the rather striking triangular patterns which are schematically portrayed in Figure 3. Thus, the peak of the first two triangles give  $x_1 - y_1 \leq B - A$ . The next position gives  $x_1 + x_2 - y_1 - y_2 \leq B - A$ . And so on. Continuing in this fashion the entire arrangement in (12.1)–(12.2) may be reproduced. In

fact, if this procedure is carried on into the bottom row, the profit function (to be maximized) is also secured as

$$\begin{aligned}
 & -c_1x_1 - \dots - c_kx_k - \dots - c_nx_n + p_1y_1 + \dots \\
 & \quad + p_ry_r + \dots + p_ny_n,
 \end{aligned}$$

the same as in (6.1).

The preceding expressions were formed from the *rows* of Figure 3, that is to say, each row gave an inequality which reproduced an expression either in (12.1) or (12.2). It so happens that another problem can be formed—which is called the dual linear programming problem—by treating the columns in like manner. That is, an expression may be formed for each *column* of Figure 3.

The variables  $t$  and  $u$  (with appropriate position subscripts) have been entered in the left-hand stub to facilitate the formation of these expressions. Thus starting with the left-hand end of the left-most pair of triangles, the

first of these dual expressions is readily written as

$$(13.1) \quad t_1 + \dots + t_k + \dots + t_n - u_2 - \dots - u_r - \dots - u_n \geq -c_1.$$

The variable  $u_1$  does not appear in this expression because a zero rather than a unit coefficient appears alongside it in the table. The same is apparently true of each expression formed from these left-most triangles so that the concluding pair of expressions formed from them are

$$(13.2) \quad \begin{aligned} & t_{n-1} + t_n - u_n \geq -c_{n-1} \\ & \text{and} \quad t_n \geq -c_n \end{aligned}$$

Noting that the subscripts correspond to time periods in the original problem, the dual constraints formed from this first pair of tri-

angles are all seen to be of the form

$$(14.1) \quad \sum_{i=k}^n t_i - \sum_{i=k+1}^n u_i \geq -c_k \quad k = 1, 2, \dots, n.$$

Since the next pair of triangles are each of the same size their constraints (formed in like manner) are seen to be

$$(14.2) \quad -\sum_{i=r}^n t_i + \sum_{i=r}^n u_i \geq p_r \quad r = 1, 2, \dots, n.$$

Finally, the dual functional, which is to be minimized, is formed by entering the variables  $t$  alongside  $B-A$  and the variables  $u$  alongside  $A$  to achieve

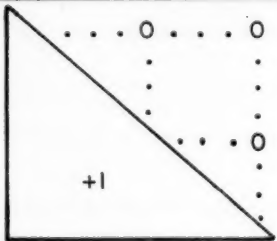
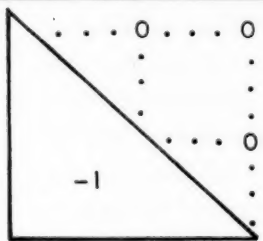
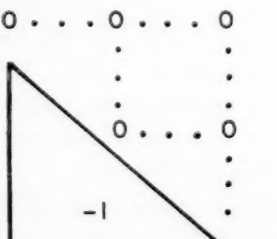
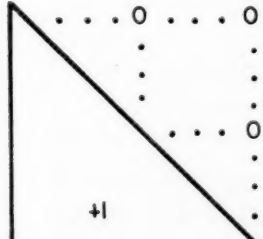
$$(14.3) \quad \text{minimize } g = (B-A) \sum_{k=1}^n t_k - A \sum_{k=1}^n u_k.$$

FIGURE 3  
SCHEMA FOR A SIMPLE WAREHOUSING MODEL

FIGURE 3

SCHEMA FOR A SIMPLE WAREHOUSING MODEL

Stip-  
ula-  
tions:

$\lambda$	$x_1 \dots x_k \dots x_n$	$y_1 \dots y_r \dots y_r$	$p_0$	
$w$				
$t_1$			$B-A$	<div>Net Storage (Buying Constraints)</div>
$\vdots$			$\vdots$	
$\vdots$			$\vdots$	
$t_k$			$B-A$	
$\vdots$			$\vdots$	
$t_n$			$B-A$	
$u_1$			$A$	<div>Sales</div>
$\vdots$			$\vdots$	
$\vdots$			$\vdots$	
$u_r$			$A$	
$\vdots$			$\vdots$	
$u_n$			$A$	
$p$	$-c_1 \dots -c_k \dots -c_n$	$p_1 \dots p_r \dots p_n$	$\leq$	IV

It will shortly be shown how the dual problem can be made to supply the desired means of managerial evaluation. This possibility emerges from a highly important mathematical theorem known as the dual theorem of linear programming. In brief this theorem states that

$$(15) \quad \text{maximum } z = \text{minimum } g$$

The following transformation will help to simplify the presentation. Let

$$(16) \quad \begin{aligned} T_k &= \sum_{i=k}^n t_i \\ U_k &= \sum_{i=k}^n u_i \end{aligned}$$

so that (14.3) may be replaced by

$$(17) \quad \text{minimize } g = (B-A)T_1 + AU_1.$$

Now let it be supposed that a minimizing solution for  $T_1$  and  $U_1$  has been obtained so that

$$(18) \quad \begin{aligned} \text{max. } z &= \sum_{j=1}^n p_j y_j - \sum_{j=1}^n c_j x_j \\ &= (B-A)T_1 + AU_1 = \text{min. } g, \end{aligned}$$

as required by the dual theorem. Next let it be supposed that  $B$  can be increased by 1 unit to  $B+1$  without altering the  $T_1$  and  $U_1$  previously calculated. Then

$$(19) \quad \begin{aligned} (B+1-A)T_1 + AU_1 \\ = (B-A)T_1 + AU_1 + T_1 \end{aligned}$$

so that  $T_1$  correctly predicts the increment to total profit which will ensue if optimal use is made of this addition to capacity.<sup>3</sup>

These ideas will shortly be made more concrete by means of a numerical illustration. Before entering into the illustration, however, the following simple kind of cash constraint may be introduced. Let  $M_0$  represent initial cash available and let  $\underline{M}$  represent a minimum

balance which must be maintained at all times. Further, let the terms of trade be as follows: Purchases are made for cash. Sales are made on an accrual basis with cash realization one period later.

A mathematical statement of these conditions may be rendered in the form

$$(20.1) \quad M_0 - \sum_{j=1}^i c_j x_j + \sum_{j=1}^{i-1} p_j y_j \geq \underline{M}.$$

Or, setting

$$(20.2) \quad \bar{M} = M_0 - \underline{M}$$

and transferring terms and signs this becomes

$$(20.3) \quad \sum_{j=1}^i c_j x_j - \sum_{j=1}^{i-1} p_j y_j \leq \bar{M}$$

for  $i = 1, 2, \dots, n.$

Evidently each of the financial conditions in (20.3) can be associated with a dual variable  $v_k$  and these may in turn be cumulated to  $V_k$  as was the case with  $t_k$  and  $u_k$  which are incorporated in, respectively  $T_k$  and  $U_k$  via (16). These cumulative dual variables  $V_k$  will turn out to be the desired incremental compound yield rates which can be used to evaluate the opportunity cost of funds.<sup>4</sup>

## NUMERICAL ILLUSTRATION

Generality may well be sacrificed for specificity with added meaning at this point. Therefore consider the data for a highly simplified 5 period example as shown in Table 5. As an aid for forming the direct and dual problems the details of Figure 4 are supplied in a way which conforms to the schema of Figure 3. Rather than repeat this kind of mathematical exercise, however, we shall proceed directly to the details of an optimum program which are given in Table 6.

By reference to the bottom row of Table 6, the total outlays are seen to be \$4700 while total receipts, all realized in cash by period 6,

<sup>3</sup> Notice that if  $A$  were increased to  $A+1$  then  $(B-(A+1))T_1 + (A+1)U_1 = (B-A)T_1 + AU_1 + (U_1 - T_1)$  so that the difference  $(U_1 - T_1)$  would determine the increment, if any, that could be earned. Thus  $U_1$  evaluates the increment to total profit by having more initial inventory while  $T_1$  calculates the decrement which occurs because this additional inventory uses up storage capacity that would otherwise be available.

<sup>4</sup> The variables  $v_k$  can be associated with time period variations (or rates of change) of these yield rates. See reference 4 for further details and interpretations.

FIGURE 4  
FIVE-PERIOD WAREHOUSING MODEL WITH FINANCIAL CONSTRAINTS

	DUAL VARIABLES DUAL VARIABLES	DIRECT VARIABLES					BUYING					SELLING					STIPULATIONS
		$x_1$	$x_2$	$x_3$	$x_4$	$x_5$	$y_1$	$y_2$	$y_3$	$y_4$	$y_5$						
BUYING CONSTRAINTS	$t_1$	1					-1								$B-A = 100$		
	$t_2$	1	1				-1	-1							$B-A = 100$		
	$t_3$	1	1	1			-1	-1	-1						$B-A = 100$		
	$t_4$	1	1	1	1		-1	-1	-1	-1					$B-A = 100$		
	$t_5$	1	1	1	1	1	-1	-1	-1	-1	-1				$B-A = 100$		
SELLING CONSTRAINTS	$u_1$						1								$A = 100$		
	$u_2$	-1					1	1							$A = 100$		
	$u_3$	-1	-1				1	1	1						$A = 100$		
	$u_4$	-1	-1	-1			1	1	1	1					$A = 100$		
	$u_5$	-1	-1	-1	-1		1	1	1	1	1				$A = 100$		
FINANCIAL CONSTRAINTS	$v_1$	25													$M_0 - \underline{M} = 500$		
	$v_2$	25	25				-20								$M_0 - \underline{M} = 500$		
	$v_3$	25	25	25			-20	-35							$M_0 - \underline{M} = 500$		
	$v_4$	25	25	25	35		-20	-35	-30						$M_0 - \underline{M} = 500$		
	$v_5$	25	25	25	35	45	-20	-35	-30	-25					$M_0 - \underline{M} = 500$		
MARKET DATA		25	25	25	35	45	20	35	30	25	50						

TABLE 5  
DATA FOR WAREHOUSING MODEL WITH  
FINANCIAL CONSTRAINTS

Period	Costs, \$ $c_j$	Prices, \$ $p_j$
1.....	25	20
2.....	25	35
3.....	25	30
4.....	35	25
5.....	45	50

$B$  = 200 tons, warehouse limit  
 $A$  = 100 tons, initial inventory  
 $M_0$  = \$1,500, initial cash position  
 $\bar{M}$  = \$1,000, minimum cash position  
 $t$  = 1 period lag in cash receipts

are seen to be \$12,600, for a maximum net return of

$$(21.1) \quad \text{maximum } z = \$12,600 - 4,700 = \$7,900.$$

Now consider the dual problem which gives values  $T_1 = \$0$ ,  $U_1 = \$70$ , and  $V_1 = 9/5$ , as shown in Table 7. The corresponding dual value is

$$(21.2) \quad \text{minimum } g = (B - A)T_1 + AU_1 + V_1\bar{M}$$

which, at

$$B - A = 100, A = 100, \bar{M} = M_0 - \underline{M} = \$500,$$

TABLE 6  
DIRECT PROGRAM SOLUTIONS:  
WAREHOUSING MODEL WITH FINANCIAL CONSTRAINTS  
DIRECT PROGRAM

Period	Buy			Sell				Cash on Hand
	Qty.	c <sub>j</sub>	Outlay	Qty.	P <sub>j</sub>	Receipts		
						Accrue	Cash	
0	100	—	—					1500
1	20	25	500		20			1000
2		25		120	35	4200		1000
3	168	25	4200		30		4200	1000
4		35			25			1000
5		45		168	50	8400		1000
6	—	—		—	—	—	8400	9400
Total	288		4700	288		12600	12600	

TABLE 7  
DUAL VALUES: WAREHOUSING MODEL WITH  
FINANCIAL CONSTRAINTS

Period	Buying Constraints $u$	Selling Constraints $w$	Financial Constraints $v$
1.....	$t_1 = 0$	$u_1 = 0$	$v_1 = 4/5$
2.....	$t_2 = 0$	$u_2 = 20$	$v_2 = 0$
3.....	$t_3 = 0$	$u_3 = 0$	$v_3 = 4/7$
4.....	$t_4 = 0$	$u_4 = 0$	$v_4 = 3/7$
5.....	$t_5 = 0$	$u_5 = 50$	$v_5 = 0$
Total.....	$T_1 = 0$	$U_1 = 70$	$V_1 = 9/5$

gives

minimum  $g$

$$(21.3) \quad = 100 \times \$0 + 100 \times \$70 + 9/5 \times \$500 \\ = \$7,900.$$

Thus, in this case at least, maximum  $z =$  minimum  $g$ , as predicted by the dual theorem.

Now the status of  $T_1 = \$0$  in Table 7 is easily explained. Note that the warehouse capacity of 200 tons is never fully utilized in the optimum program specified in the quantity column

(under "Buy") in Table 6. Hence, if this firm wishes to assess the value of an additional ton of warehouse capacity *to be used in its business*,<sup>5</sup> it will conclude (or should conclude) by common sense, as well as by linear programming, that it is worth \$0, and no more.

The value  $U_1 = \$70$  applies to opening inventory. The meaning of this figure may most easily be understood if attention is first turned, however, to  $V_1 = 9/5$ . Suppose, by analogy with the usual discount and accumulation formulas—e.g.,  $(1+i)^n - 1$ —that a new variable

$$(22.1) \quad W_k = 1 + V_k$$

is introduced so that, in the present case,

$$(22.2) \quad W_1 = 1 + V_1 = 1 + 9/5 = 14/5.$$

Let it now be supposed that this firm is considering the addition of \$1 to its original cash balance of  $M_0 = \$1500$ . Optimum use of this increment to cash would be, according to the pattern of Table 6, buy 1/25 of a unit in period

<sup>5</sup> Lease outs (and ins) may be considered by introducing the appropriate mathematical expressions.

1, sell it in period 2 at the prevailing price, and then wait for cash realization in period 3. Then invest this dollar *plus* the additional earnings in period 3 for a sale in period 5 for the still further accretion which will be realized in cash at the start of period 6 (or end of period 5). The total optimum return would then be given by

$$(23.1) \quad 1/25 \times 35 \times 1/25 \times 50 = 14/5 .$$

Deducting the original dollar increment to investment the net cumulative return is seen to be

$$(23.2) \quad V_1 = W_1 - 1 = 14/5 - 1 = 9/5 ,$$

as given for the value of  $V_1$  at the foot of column 3 in Table 8.

It is therefore seen that  $V_1$  provides the net evaluator which gives the correct measure of the opportunity cost of funds invested or withdrawn. Particular attention should, perhaps, be drawn to the following attributes of this evaluator. First it is automatically supplied without extra work as a result of the method of solution used. Second, it considers all of the relevant opportunities and constraints. Third, unlike the usual formulas, it evaluates *increments* and *decrements* to funds—which are the relevant magnitudes for opportunity cost calculations.

Now it is possible also to use  $V_1$  and  $W_1$  as internal evaluators for proposed alterations in facilities, extension (and receipt) of credit, inventory carrying, *etc.* Detailed interpretations along with appropriate illustrations have been supplied elsewhere.<sup>6</sup> Hence it will be sufficient simply to conclude this discussion by attempting to elucidate the value  $U_1 = \$70$  (which is applicable to opening inventory) in Table 8. Note that the sale of this additional unit of opening inventory would be optimally effected in period 3 at a price of \$35. It might seem that it was therefore worth up to \$35 for this firm to have an additional unit of opening inventory. This is not the case, however, since

the opportunity cost of investing \$35 of cash (or possibly a smaller amount) must also be considered. Now

$$V_3 = \sum_{i=3}^5 v_i = 1 \quad \text{and} \quad W_3 = 1 + V_3 = 2$$

gives  $2 \times \$35 = \$70$  as the cash equivalent to which this extra unit of inventory will accumulate at the close of business. On the other hand, an addition of \$35 to opening cash would be worth more to this firm than a gift of 1 ton of opening inventory. If this cash were available then advantage could be taken of the return (increment) of  $v_1 = 4/5$  available in period 1 whereas this opportunity does not exist for an additional ton of inventory. To put the matter differently, the discounted present value of an additional ton of opening inventory is worth only  $\$70/W_1 = \$70 \div 14/5 = \$25$ , as is confirmed by checking the prices at which inventory can be acquired for a sale in period 3.

#### A WAREHOUSE-FINANCE TRANSPORTATION TYPE MODEL

The use of such "funds evaluators" is, of course, perfectly general so that (once the interpretations are clear) they need not be restricted to warehouse models. The latter does, however, provide an extremely simple way of capturing the essential feature of transactions stretching across time periods—a feature which must be utilized if compound (rather than simple) interest formulas are to be secured.

There are still other uses of warehouse models but it may perhaps be best to turn the matter around and show how the warehouse-funds-flow example of the preceding sections may also be transformed into a model of "transportation type" which allows the transshipment of funds and goods from one period to the next.

The following transformations will show how this may be done in a way which provides access to convenient methods of solution. De-

<sup>6</sup> See reference 4.



second row as  $R_1 + c_1x_1 = F_1 = \bar{M}$  where  $c_1 = \$25$  is entered in the second square oriented in the row direction from which the constraint is to be formed. Similarly, the first column on the left gives  $p_1y_1 + R_1 - F_2 = 0$  as in the next to last definition for  $j = 1$  in (24.1). Finally, the warehouse capacity  $h_j \leq B = 200$ , or  $-h_j \geq -200$ , is entered in the connecting cells which serve as goods transshipment cells from one period to the next.<sup>7</sup>

Continuing in this fashion, the relevant constraints for each  $j = 1, 2, \dots, n$  are formed for (24.1). It is perhaps worth noting, however, that no cells are provided for  $g_5$  or  $x_5$ . With a 5-period horizon it will not be profitable to acquire goods in period 5 so that these cells must have a zero entry (in an optimum program) and may therefore be eliminated from further consideration. Finally, the coefficient,  $-1$ , in the cell for  $-F_6$  is given a special status by placing it in a corner. By reference to (24.2) it is seen that the objective is, essentially, to maximize  $F_6 = \max (-1) (-F_6)$  for this 5 period ( $n = 5$ ) problem. This then is the meaning to be assigned to this box in the cell for  $F_6$ .

Again it is possible to synthesize an especially efficient method of solution. Those who are interested in the actual manner by which a suitable algorithm may be constructed may refer to the reference 3 where these details are set forth. It will then be seen that the objectives in synthesizing the algorithms were as follows: (1) to ensure that it could be extended to the real case which has a *structure* that shares many features in common with the warehouse prototype and (2) to ensure that the dual evaluation could be secured without extra work. The latter feature was necessary in order to preserve the desired feature of a guide for managerial evaluations of possible cash commitments and withdrawals where all cash was utilized in an optimum manner.

<sup>7</sup> Similarly, the cells for  $F$  represent funds transshipment cells for transferring available (net) cash from one period to the next one.

## CONCLUSION

The examples above have shown two possible uses of model types and prototypes in attacking a large and complex problem. The pipeliner example showed how certain parts of the problem could be reduced to a standard format. The warehouse example showed how certain concepts associated with the complex field of capital and interest theory could be studied in a simple case which (by virtue of its structure) was pertinent for the actual problem.

There are still additional aspects of this study that might be profitably discussed but which cannot be entered into here. One *general* feature which is emerging from experience in such applications might, however, be noted. The properties of certain special model types have been extensively studied and current research is providing ever more efficient methods of solving each of them. As time goes on, it might be expected that general guiding principles may be evolved for guiding the evolution of special algorithms as well as for identifying efficient combinations of particular application. (See, e.g., references 3 and 4.)

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PAUL T. HOMAN

## Galbraith's "Affluent Society"

*A distinguished economist evaluates a controversial best-seller of particular interest to the business community.*

In the present century, the only English-speaking economists to achieve much of either fame or notoriety beyond professional circles have been Veblen and Keynes. This did not happen because they were foremost in their scientific contributions to knowledge. It happened for two reasons: first, because they brought fresh thinking peculiarly applicable to the social and economic problems of their times and, second, because they possessed a peculiar combination of shock-producing originality of mind and rhetorical persuasiveness. Nor was their impact accidental or fortuitous. They deliberately directed their great intellectual powers to influencing their generation, first through their professional colleagues and then through both direct and indirect transmission to a wider public. A few lesser economists have attempted somewhat similar missions with indifferent success, but generally speaking, it is not a role to which economists aspire, being content to pursue their scientific work and on occasions to serve as technical consultants in matters of economic policy.

It would be an exaggeration to say that J. K. Galbraith has now entered this exclusive company on equal terms. But with his widely-read book, *The Affluent Society*,<sup>1</sup> he may be said to have entered the environs and to be, as yet lightly, knocking at the door. At the least, he possesses some of the superficial stigmata of the society. He has taken a leaf out of Keynes'

method in the *General Theory*. Keynes started off by profaning one of the sacred altars of economic doctrine and, having thus startled his audience into alert attention, proceeded to unfold a persuasive argument. Galbraith has also taken a leaf out of Veblen. Veblen was a satirist, and used caricature to compel attention to neglected aspects of reality. In the field of social commentary it is a valid, not to say an indispensable, method. It is certainly true that we all entertain conventional attitudes toward the life around us; and it is important that from time to time we be shocked into recognizing the shortcomings of these attitudes in relation to the seething world of social reality.

This is where Galbraith's service mainly lies, in exposing the inadequacy of much conventional thinking and in opening up neglected facets of familiar facts. In doing so, he is deliberately "destructive." His attitude is that constructive improvement in our social arrangements is impossible until people have seen "the comfortable and the accepted" in new perspectives. They have to be shocked out of complacency. So he provides a shocker. "... an essay such as this," he says, "is far more important for what it destroys—or to speak more accurately, for the destruction which it crystallizes, since the ultimate enemy of myth is circumstance—than for what it creates" (p. 182). He does, indeed, go on to some constructive proposals, but these, though

<sup>1</sup> Boston: Houghton Mifflin, 1958.

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worth attention, are hardly more than marginal to the range of problems he has presented.

Since it was his intention to write a controversial book, he cannot have been disappointed in the result. He may, nevertheless, have been surprised, not merely at the intensity of the opinions ranging from rage to adulation, but more particularly at the distortions to which his ideas have been subjected. From reading the reviews, one could hardly imagine they all referred to the same book. In private discussion, it is clear that Galbraith is receiving the treatment reserved for all writers of controversial best-sellers—that of having what are supposed to be his ideas bandied about by people who have never read the book.

"Galbraith," like "Keynes," seems destined to become a naughty word in some circles and a holy word in other circles, with a range of meanings in between. His book might be considered a sort of economic *Lolita*.

Even those who have read the book are able to find, not merely many things to argue about, but many meanings. Thus, in the First National City Bank *Monthly Letter* (January 1959) one reads that "Professor Galbraith . . . says Americans are too well off." As I read the book, he says they are not as well off as they have the means to be. It all depends on what you mean by "well off." Again, a fellow economist, Colin Clark, writing in the *National Review* (October 11, 1958) says: "... it is much better, Professor Galbraith teaches, to have the economy run by powerful cartels and monopolies in the European style, protected by high tariffs." I cannot myself find anything which justifies this dictum. "The conclusion to which this book leads," Clark further finds, is a "new class," "ominously reminiscent of Orwell's 1984," "the custodians, virtually the sole custodians, of culture." So far as I can discover, Galbraith is looking for ways to recruit a growing proportion of the population to the ranks of those who really enjoy their work and leisure.

The unfavorable comments are not confined

to those with conservative attitudes. For example, Leon Keyserling, a colleague of Galbraith on the Advisory Committee on Economic Policy of the Democratic Advisory Council, writing in *The New Republic* (October 27, 1958), challenges Galbraith's central thesis right down the middle. And many professional economists adopt a posture of slightly sneering deprecation.

The fact is that Galbraith "asks for" this kind of treatment. He asks for it in three ways. In the first place, he charges that practically all attitudes toward economic policy—whether liberal or conservative, lay or professional—reflect various forms of "conventional wisdom" which is out of touch with the realities of contemporary economic life. He therefore arouses opposition in as many quarters as possible. In the second place, he pursues his critical argument with a not too gentle irony, supported by a witty turn of thought and a gift for the telling phrase. People do not like this sort of treatment. In the third place, he covers complicated questions with extreme brevity, which, together with his placing of emphasis, opens the way to misinterpretation.

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Galbraith organizes his argument around "a modern paradox:" "why it is that as production has increased in modern times concern for production seems also to have increased" (p. 120). He has spent over a hundred pages leading up to this statement of the paradox; one hundred and sixty pages later he hopes that he has destroyed "the thralldom of a myth—the myth that production, by its overpowering importance and its ineluctable difficulty, is the central problem of our lives" (p. 280). Thereafter, for the final seventy pages, he explores "new goals."

In the first of these three divisions, he explains the preoccupation with production by reference to earlier economic circumstances and patterns of economic thought. In the second, he examines the weaknesses in our ad-

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ministration of productive resources, establishes the relative unimportance of much that is produced, and states his views on some unsolved problems which continue to harass the American economic society. In the third, he goes a short distance toward proposing remedies.

While the central argument is essentially rather simple, it is not easy to summarize the whole range of Galbraith's thinking. The reason is that his mind flows out in eddies and excursions in a series of interesting, witty, and sometimes brilliant commentaries on aspects of American life and thought. Much of the interest of the book, and no doubt most of its popularity, are to be found in these excursions. But they cannot be conveyed with brevity. I shall therefore attempt to summarize only his sober central argument.

The best way to organize this summary is to start in the middle and work in both directions. The focal point is that much of what we now produce is of secondary importance and could be dispensed with without serious discomfort or sacrifice of well-being, except as it is related to competitive standards of consumption. He establishes this thesis by three lines of argument. The first is a casual look around, pointing to the frivolous elements in our objects of consumption. The second is that the wants which these things satisfy are not spontaneous with the consuming public, but are themselves produced by the selling arts. Production leads to consumer desires, and not *vice versa*. The third is based upon the economic principle of diminishing utility—that as additional goods become available they satisfy decreasingly urgent wants.

This third point leads into a rather technical examination of the economists' theory of consumer behavior. While diminishing utility may be accepted as operative at any given time, an economist can reasonably argue that it does not hold for comparing the urgency of wants in one period of time with that of another. Increases

of income may open up whole new areas of consumption possibility and the marginal strength of desire in these new circumstances may be no less, or even greater, than in the earlier situation. Conceding some force to this idea on technical grounds, Galbraith nevertheless is ironically critical of economists for not looking behind these new wants to their business and sociological sources. By taking wants for granted as data, and by defining the economic function as that of satisfying wants to the fullest degree possible from available resources, the economists give their tacit blessing to all production in purely quantitative terms, disregarding the artificial character of the want structure and applying no qualitative tests. In this behavior, economists are, he judges, victims of the ethos of our times, to which they bring the support of outdated ideas.

From this central thesis, we turn back to the origins of the contemporary over-emphasis on production as such. Galbraith has led up to his thesis by a skillful *resumé* of past economic thought bearing on the subject. For Ricardo, a century and a half ago, the economic prospects of most of the human race were dim. Nature was niggardly; and the propensity of the population to increase tended to cancel out any gains. Such improvement as was possible depended upon improvements in productive capacity and methods. The best way to insure this was to give the fullest play to the incentive of self-interest. Business enterprise and competitive organization were, he thought, the best ways to maximize the production which would alleviate the general poverty. Maximum personal liberty, a good thing in itself, joined with economic expediency to comprise a system of economic morality.

Private enterprise and competitive organization, however, introduced three disturbing elements into the system. The first was great inequality of fortune. The pushing and ingenious innovators could amass fortunes to be enjoyed in the midst of pervading poverty;

this led to moral uneasiness about the system; and reform movements to mitigate the situation reflected sharp conflicts of economic interest. Those who enjoyed the blessings were at pains to justify the system in every possible way, including the appeal to the laws of God and nature.

The second disturbing element was economic insecurity. Competition was no respecter of individual fortunes. Firms and individuals were made or broken according to the rules of the market. This led to persistent efforts at all levels of the system to achieve some degree of economic security. The third disturbing element was the fact of severe periodic depressions, generally regarded as a normal but self-correcting feature of the system. This phase of his account Galbraith summarizes as follows: "To the lingering fear that poverty might be normal, the increasing conviction that inequality was inevitable and the sense of individual insecurity which was inherent in the competitive model, the orthodox view of the business cycle added a much more general sense of disquiet" (p. 46).

American potentialities, and the optimism they engendered, somewhat softened this gloomy outlook. But thought was divided. On one side was a line of reformers ultimately crystallized in Veblen, who felt that a satisfactory destiny for the common run of mankind would require drastic departure from the structure of capitalism. On the other side, at the favored top of the structure, Social Darwinism provided a new rationale for the system. The central doctrine was that life is a struggle for the survival of the fittest, and the free market was the arena for this struggle. Struggle for survival being nature's law, the cruelties and tragedies inherent in the system were turned into the unavoidable details of racial evolution, in which poverty would be ended by weeding out the unfit. If this doctrine could be used as a pleasant rationalization of inequality and the great new fortunes, it also received some

support from the oldest of American traditions: that anyone worth his salt could make his way in the world.

But Social Darwinism was not a doctrine acceptable to the mass of the people living under the new industrial conditions generated by technological change. The political forces of democracy could be used to change institutions and to soften the struggle. Moreover, it was difficult to use Social Darwinism to rationalize the position of the rising great corporations, as distinct from captains of industry.

Nevertheless, as a sort of residue, Social Darwinism brought into the "age of affluence" a presumption that poverty, insecurity and inequality were inherent in the life of economic society, even the most favored. In addition, it strengthened the mystique of the market which, if no longer the protector of the vigor of the race, was the final refuge of the liberty of the individual. It thus created impalpable barriers to "social measures designed to rescue the individual from the privation or to protect him from the hazards of economic life" (p. 63). At the same time, the subtly pervasive ideas of Marx suggested the continuance of great economic ills.

"Up to twenty or twenty-five years ago," Galbraith summarizes, "... the broad impact of economic ideas . . . could not but leave a man with a sense of the depth, pervasiveness, and burden of the economic problem and, on the whole, with the improbability of a happy outcome" (p. 75). The depression of the nineteen thirties accentuated the old economic problems. "These—productivity, inequality, and insecurity—were the ancient preoccupations of economics. They were never more its preoccupations than in the nineteen thirties as the subject stood in a great valley facing, all unknowingly, a mountainous rise in well-being" (p. 7).

This rising tide of opulence, Galbraith goes on to argue, has greatly changed the essential character of our economic problems. In the first place, it has largely hushed the old com-

plaints against inequality and reform proposals based on redistribution. Something has been done in this direction through the graduated income tax, while full employment and upward wage pressures have leveled income from below. At bottom, the retreat of inequality as an issue is attributable to the general rise in economic well-being. The wealthy have become less important, less visible, and less subject to envy; and there is little inclination to question the functional role of some inequality as an incentive to enterprise and as a source of capital. Increased production has become the alternative to redistribution—"the great solvent of the tensions associated with inequality" (p. 95).

Similarly, the insecurity created by competition has become a dwindling preoccupation. All groups hounded by such insecurity have had an incentive to diminish it, and their efforts by and large have been fairly successful. The great corporations, he says, have achieved a considerable power to protect their market position and no longer suffer from serious competitive hazards. Other groups—unions, farmers, the aged, the unemployed, and professional and business groups—have had their insecurity much diminished by government action or their own collective action. In addition, the great generalized source of insecurity, business depressions, are no longer regarded as inevitable. It has become a principal goal of public policy to stabilize the economy at a level where something close to full employment is maintained. Assuming that this effort will be moderately successful, economic insecurity, if not finished business, will at least have given way to problems of a lower order or urgency.

The conclusion stares one in the face: "Thus the effort to enhance economic security becomes the driving force behind production" (p. 119). This brings us back to where we started in this section—the "modern paradox . . . that as production has increased in modern times concern for production seems also to

have increased." The reason for the concern is no longer that a mere quantitative increase in the things produced is of much importance to consumers as a means of banishing poverty. Production is, however, of the utmost importance as a means to maintain continuity of livelihood. Maintaining a high level of employment presents serious problems. At the same time, since it is not the things-in-themselves that are important, new economic vistas open up. At the margins of production, attention can be turned from mere quantitative output to the qualitative character of what is to be produced. To these problems and these vistas Galbraith devotes the remainder of his book.

In leading up to this point Galbraith has accomplished an intellectual *tour de force* by compressing into so small a space an account of the economic ideas and circumstances which generated American attitudes toward production. One can quibble at details—at the distortions compelled by brevity, at omissions, at degrees of emphasis. But in the large the account is a valid one, skillfully rendered. At the same time he has done something very different, and more arguable. He has infiltrated a very personal interpretation of what has happened to the American economy. Increasing security and increasing productivity have, he finds, gone hand in hand. This gives him a sympathetic attitude toward almost all efforts to eliminate insecurity—whether by private groups or by public action, from great corporations through union strength and farm programs to social security measures. He does not necessarily approve the various stratagems of self-interested groups, but he downgrades the possible damage they may do. At the base of his thinking is a thorough-going dissent from the view, popular in the policy writing of many economists, that the economy should be kept as near the competitive model as possible. This posture, it might be thought, should gain him the approval of all sorts of vested interest. But most of this latent support he throws away in

the course of the argument which I shall summarize in the next section.

He has also downgraded the issue of inequality which has been so close to the heart of many reform movements. It is no doubt true, as he says, that a generally rising level of economic well-being has diverted attention from inequality as a popular issue. But there are latent aspects which persist even in an opulent society. In the thinking of many people, a nearer approach to equality is a necessary condition of the "good society" to which they aspire. These more distant reaches of social philosophy do not enter into Galbraith's field of vision. He thereby dissociates himself from reform movements of any broad character.

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Galbraith's central argument was summarized at the beginning of the preceding section to the general effect that much production is misdirected into frivolous channels, precariously supported by an artificially induced consumer demand, while socially more important goals are being neglected. We must now see how this argument is elaborated and the problems of social action into which it leads.

"Our peacetime concern for production," Galbraith says, "is selective and traditional" (p. 132). This divides into two points. The first is that improvements in the methods of production are neglected in fields where they could produce striking results. We take for granted that the innovations and investments which actually take place are the most useful ones. But they are largely concentrated in strong firms in particular industries which can afford the necessary research and experimentation; "there is no special concern about the industry that does no research and makes little technological progress" (p. 129), for example, coal-mining. Investments in education which could yield great productive results are neglected. These and other unexploited opportunities for increasing production are adduced

as evidence that, in spite of protestations to the contrary, our society really regards production as a problem of relatively low urgency: "... at any given time," he asserts, "both our total output and its rate of increase are only a small part of what it might be, perhaps only a minor fraction" (p. 132).<sup>2</sup>

The other and, for Galbraith, much more fundamental point is that, "In the general view it is privately produced production that is important, and that nearly alone" (p. 133). "At best public services are a necessary evil; at worst they are a malign tendency" (p. 133). That the importance attached to private production is inordinate is, he thinks, demonstrated by the obvious unimportance of much that is produced. Yet much of the "conventional wisdom" is devoted to justifying the actual flow of goods. Here the economists' theory of consumer demand does yeoman service. Nothing, however, so clearly exposes the marginal unimportance of production as the fact that the very wants it satisfies have themselves to be manufactured. The ball is kept rolling by the ancient trait of emulation and the requirements of social prestige. We are trapped into a grinding pursuit of larger income to satisfy purely conventional desires. The increasing affluence of our society provides no escape. But "Among the many models of the good society no one has urged the squirrel wheel" (p. 159).

Galbraith identifies the American business community as the great vested interest in maintaining the myth of the importance of production. This interest is not solely pecuniary; it is also a matter of prestige. Beginning with the depression years, the dominating place of business men in the prestige ratings faded before the encroachments of government and of the "liberals" whose ideas defined the enhanced role of government. The liberals, however, have forfeited their own position. The depression

<sup>2</sup> Jove nodded at this point. The statement could not be true of total output at any given time.

called for public action to raise the level of production and employment; but when that emergency was over, liberals failed to invent any other program and were left with no creed except that of an expanding economy. This simply places them in a subordinate role to the business community which is responsible for production. Since businessmen have to a large degree accepted the role of government as an important regulator of the general level of economic activity, the liberals can contribute only marginal comment as to potentialities for expansion.

Another point where Galbraith finds the emphasis upon production to be misplaced is in its relation to national defense. He sets out to destroy "the myth that military power is a function of economic output" (p. 178). For a war like World War II, and even for a limited war like Korea, a strong addiction to consumer goods limited the speed and extent of transference of resources to military purposes. For future wars, or even for the strategy of deterrence, "the question is not the size of the economy but how much can be diverted to public purposes" (p. 178). "It is not gross output but usable military output which counts" (p. 166). Reviewing the political history on this point, and the attitudes of Secretaries of the Treasury and Defense as to what we could "afford" for defense, Galbraith concludes that the conventional emphasis on high consumption acts as a positive obstacle to an adequate program of national defense.

In one respect, Galbraith proceeds, production is as important as it ever was—for reasons of economic security. Productive activity must go on as a source of income, and must expand to absorb an expanding labor force. For serving this function, however, the present structure of production is precarious. The reason for this is that, in addition to creating the wants to be satisfied, the business community also creates the means of payment with which to satisfy them. Expanding production is matched

by an expanding volume of consumer debt. The arts of persuasion are extended to persuading people to commit their future incomes to present consumption. Expansion of production comes to depend upon expanded debt. Increased spending comes when it is least needed, in prosperous times, and adds to inflationary pressures. Any slow-down in debt creation creates unemployment. "Drastic and spiraling liquidation" of this credit is always within the range of possibility, adding an additional hazard to the latent volatility of business credit and spending for investment purposes.

The processes of consumer demand creation and its financing thus constitutes one of the central problems of an affluent society. Another is the tendency to chronic or recurrent inflation.

The principal element of interest in Galbraith's treatment of the inflation problem is his argument that reliance on monetary policy as an anti-inflation device is an "evasion." He starts from the assumption that over a substantial part of the industrial system, marked by oligopoly, price increases are not closely tied to capacity operation or to rising demand. For a variety of reasons of policy, managements do not set prices to maximize short-run profits, and firms therefore typically have "a reserve of unliquidated gains from unmade price advances" (p. 217). Wage demands by unions commonly provide the occasion for price increases, giving rise to the wage-price spiral. This spiral is not really a "cost-push" phenomenon, but part of the strategy of business in determining when to raise prices and increase profits. Higher living costs and higher profits then provide the incentives to unions to generate another wage increase. "The wage, price, profit spiral originates in the part of the economy where firms with a strong (or oligopolistic) market position bargain with strong unions" (p. 220).

With this source of inflation, monetary policy makes only a secondary contact and is

ineffective. Moreover, monetary policy is in conflict with the machinery of consumer want creation and financing and is unlikely to make much effective contact with them. Also, if effectively applied, monetary policy would collide with the investment process which supports economic growth. Investment spending is "the most mercurial dominion of economic activity;" any effort to reach price inflation by this route runs the danger of precipitating a depression.

For these and other reasons, monetary policy is likely to be either ineffective or so dangerous that it will be too sparingly used to reach the sources of inflation. The place where monetary policy can be effective is upon competitive industries such as agriculture. But this is not where the inflationary pressures originate.

Galbraith is also rather skeptical of the other conventional instrument for fighting inflation, fiscal policy. It would ordinarily require increased taxes and budget surpluses, hard to engineer politically. To be effective, moreover, it would have to cut back general market demand so far as to create substantial unemployment and the rate of economic growth which would support full employment.

Thus we arrive at an impasse. Price stability under present market conditions requires a substantial margin of unemployment. But "We are impelled by present attitudes and goals to seek to operate the economy at capacity where...inflation must be regarded not as an abnormal but as a normal prospect" (pp. 248-49). Thus, inflation stands out as a second unsolved problem of the affluent society. This problem might be brought under control by a limited use of direct price and wage controls at critical points of inflationary pressure, in conjunction with discreet use of monetary and fiscal policies. The "conventional wisdom," however, has only horror for this blasphemous idea.

The third and last problem to which Gal-

braith turns his attention is what to produce. This one lies close to his heart and arises directly out of his earlier ironical *exposé* of the frivolous uses to which we put much of our productive resources. He proposes "a satisfactory relationship between the supply of privately produced goods and services and those of the state" (p. 255) to which he gives the name of "social balance." He provides a long and impressive list of useful public services which might be had at the cost only of foregoing unimportant, silly or meretricious objects of consumption.

There arises, of course, the shadow of the sovereign consumer. The usual view is that consumers can have what they want, and can take as much of their real income in public services as they collectively decide. On this point Galbraith makes a telling rebuttal. The cards are stacked. All the arts of persuasion are on one side. In addition, the whole heritage of prejudice turns the support of public services into a "burden." Further, any extension of the public service raises the question of who is to pay, and tends to break "the truce on inequality." Inflation, moreover, undermines the attractiveness of public employment. The problems of social balance are most severe at the state and local level where the revenue problems are most difficult. In these impeding circumstances, even "To suggest that we canvass our public wants to see where happiness can be improved by more and better services has a sharply radical tone.... By contrast the man who devises a nostrum for a nonexistent need and then successfully promotes both remains one of nature's noblemen" (p. 269).

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What to do? Galbraith does not go very far in pursuit of this question. His main purpose has been, as he says, "to destroy." Or, more accurately, to subject people to "a major wrench" in their attitudes. Once the thralldom of mere quantitative production is broken,

there must be a "concern for new goals." If "efficiency" in the production of trivialities becomes less important, we shall have to review our society in new terms self-consciously directed to promoting "the good life"—the terms of "compassion, individual happiness and well-being, the minimization of community and other social tensions" (p. 289). In the business world, "the relation of the modern corporation to the people who comprise it—their chance for dignity, individuality, and full development of personality—may be at least as important as efficiency" (p. 288). What is ultimately at stake is a system of social morality. In a world of poverty, some case could be made for a system of morality which imposed rules of economic efficiency, however cruel to individuals. In an opulent world, some other rules are necessary. Opulence must be made to further other goals—those which will cultivate the essential worth and dignity of man.

This is the broad message. Meantime, as he has shown, there are immediate, concrete problems. Toward the solution of these he throws out a few suggested lines of advance.

Inflation he finds intolerable as "the implacable enemy of social balance," but at the same time practically certain to persist under conditions of full employment. If price stability requires unemployment, people must still live. To alleviate the burden of unemployment, he proposes that unemployment compensation should be on a sliding scale, going higher as the level of unemployment increases. One merit of this is, he finds, that "no particular group of people is singled out for misfortune when demand falls below full employment levels" (p. 303). The other merit is that the more sustained level of consumer demand would itself limit the deviation from full employment levels. The plan would "make tolerable the unemployment which is associated with price stability" (p. 305). If a maximum employment policy is followed, curbing inflation will, he thinks, require the use of direct price and wage controls

on a limited scale. He does not advocate it, but at the same time is not terrified by the prospect.

The second proposal is a plan for financing an expanded program of public services at the state and local level, the "large ready-made needs for schools, hospitals, slum-clearance and urban development, sanitation, parks, playgrounds, police, and a thousand other things" (p. 308). To smooth the way toward a better social balance, Galbraith sees the need for "a system of taxation which automatically makes a pro rata share of increasing income available to public authority for public purposes" (p. 311). Since so much of the problem of adequate public services is at the state and local level (and given the existing federal income tax structure), a much expanded use of the sales tax is proposed on consumer goods and services. He makes a reasoned defense of this proposal against the conventional liberal objections to sales taxes.

In a third sphere, proposals are made to cope with the remnants of poverty which linger on even in an affluent society. This poverty Galbraith classifies as mainly (1) "case poverty" associated with deficiencies in the qualities of individuals, and (2) "insular poverty" associated with special environmental situations and with factors producing occupational and regional immobility. The first principle is to maintain a social minimum income for decency and comfort. The second is to take whatever other steps are required to prevent poverty from being self-perpetuating in families and districts. Around this principle cluster a whole group of possible measures—slum clearance, housing, emigration from rural slums, but in particular educational and other services which will enable individuals to take advantage of the opportunities afforded by the general opulence of society.

The fourth direction for policy does not so easily reduce itself to specific proposals. It centers around a general goal of making the working life more pleasant and satisfying.

What Galbraith calls the "New Class" is that large and rapidly expanding group whose work is inherently interesting and not just a job to be done, and whose educational opportunities give them access to superior cultural activities. He proposes a public policy of deliberately promoting the enlargement of this "class" to the ultimate end of getting as many as possible of the whole population into a happy state of pleasure in their work and richness in their cultural life. The idea is merely sketched in—with such brevity that it gives no real clue to what processes of sociological change would be involved. The "class" orientation given to the discussion is unfortunate since it opens the way to a snobbish interpretation of what I judge to be Galbraith's unsnobbish intent.

The book ends on the note of the capacities of our economic society to promote (1) "happiness," (2) survival in the military sense, and (3) aid to other parts of the world in their efforts to escape from poverty. In none of these directions does he find that the contemporary emphasis upon increase of consumer goods will aid in the solution of the most urgent social problems of our times.

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As the preceding summary will have demonstrated, Galbraith's argument explores a wide territory. At the center lies the thesis concerning the relative marginal unimportance of the consumer goods with which our structure of production presents us. To guard this thesis, he has set up barricades to all quarters of the compass; or in perhaps a better metaphor, he has sent out commando raiding squads in all directions. He is not simply guarding the thesis from attack; he is out to divide, disconcert and disorganize its enemies.

But the thesis itself is purely instrumental. The destructive attack upon the "conventional wisdom" is only a preliminary to a constructive approach to lines of improvement. These

lines imply a substantial expansion in the public sector of the economy. Galbraith's conviction is that, if people can only be made to see what they are sacrificing by clinging to modes of thought and action imposed by tradition and vested interest, they will then have a basis for choice between the greater and the lesser good.

In carrying out his design, Galbraith intrudes his attention into almost every important topic of economic policy discussion, and many minor ones; and also on occasion into even broader sociological territory. The discussion ranges from social philosophy in the broadest sense to the minutiae of interest rates, from national security to slums, from business prejudices to the refinements of economic theory. In whatever direction, the usual purpose is to lay the ghost of some idea or practice or policy.

One consequence of this wide-flung discourse is that each topic is compressed into narrow compass. Brevity prevents "well-balanced" discussion of anything. The sharply stated opinions, without qualification, at times carry an air of arrogance. There are more blacks and whites, and fewer shades of gray, than a more judicious mind might think to be called for. Practically every point in the book takes up a controversial subject—that is why it is there. There is something for almost everyone to disagree with, and something to agree with. In these circumstances, it is quite impossible, in a brief article, to present critical commentary over the range of topics he takes up. An adequate critique would require a book at least as long as the original. I shall, therefore, in conclusion present only a few brief notes.

1. The main importance of the book lies, not in its detailed points, but in the message which is conveyed by its totality. The message is that, when a free society has banished the poverty which has through endless time been the plague of mankind, it must shake off the obsession

for maximizing the production of whatever consumer goods the market brings forth. It must reconsider its goals. It must think about the ways in which, upon a firm economic base, man's life can be made more satisfying and spiritually richer, about how the higher aspirations and potentialities of man can be more nearly fulfilled. What is involved is not a problem of maximization in any strictly economic sense, but a whole social philosophy.

On this front Galbraith occupies the strongest possible position. He is right, too, in thinking that progress in this direction requires that people be jolted out of conventional habits of thought. In this respect, he is unduly modest about the role of fresh thinking. "Ideas," he says "are inherently conservative. They yield not to the attack of other ideas but to the massive onslaught of circumstances with which they cannot contend" (p. 20). This is to denigrate his own services and those of others like him. Changing circumstances generate a welter of ideas, some of which will prevail. There is a necessary battle of ideas. There is no certainty that "good" ideas will prevail. But unless one thinks they have a chance, there would be no point in attempting to formulate them except as a special form of egoism.

The philosophy that Galbraith entertains has a content much deeper than the strictly economic. It is of a piece with much current thinking among social philosophers and among a number of other social scientists. At the center of it stands a strong sense of the dignity of man and a conviction that any satisfactory destiny depends upon the sense of human dignity and the quality of "loving-kindness." Galbraith is an economist, and expresses the philosophy in some of its economic aspects. Even though unimpressed by all the more technical points in his economic analysis, one could still applaud his vigorous espousal of this philosophy.

Galbraith would not, I think, object to being credited with this philosophy. But he would

probably insist in being judged, not solely on his philosophy, but on the merits of his narrower economic arguments. To these I must then briefly turn.

2. His central thesis, that a substantial portion of our productive resources are devoted to frivolous uses, is hardly open to argument. There is a margin for transference to other uses or a margin for slacking off, if people can be convinced of the superior qualitative advantages of the alternatives. Galbraith is somewhat haphazard in parading these alternatives, and, by spending so much space satirizing consumption, opens himself to the charge of saying that we have "too much." But this is not his point. We merely have too much of the wrong things.

We are foregoing qualitatively superior services. We are providing inadequate social minima for the unfortunate. We are skimping on the right kind of educational and cultural opportunities. We let conventional consumption requirements impair our thinking and weaken our policy on national defense. We let it also deter us from doing what is both wise and humane in assisting other peoples to improve their economic condition. Less "efficiency" in production or more leisure are simply two among many possible alternatives. But the argument as a whole does not mean that production is unimportant as such; or that technological progress and growth are of no account.

The general argument being accepted, there is nevertheless a range of topics which he neglects, but which cannot be conjured away. For example, Galbraith appears to justify the "truce on inequality" which opulence and rising standards of living have brought. This raises two points. The first is that, though most people have escaped real poverty, a substantial portion fall short of what they can reasonably aspire to in an opulent society. The second is that, so long as great inequality continues to exist, the inescapable emulative stresses are

certain to make larger income a primary object of desire. If those at the bottom can only move upward by a total raising of the structure of inequality, then *to them* increased production is bound to seem extremely important. The inequality problem stays with us in much more complicated ways than I can take up here.

Another difficulty is that a substantial transfer of income into public sources, as Galbraith proposes, will not of itself solve the problem of "frivolity" in consumption. He never attempts to quantify such a transfer. But let us assume a transfer of 10 per cent, of disposable personal income, or say \$30 billion, an amount which would increase as national income increases. Even if by democratic processes such a transfer were approved, there is no assurance that it would be at the expense of the frivolities which Galbraith deplores. There is nothing in his line of thought that would inhibit the continued use of the arts of persuasion. Nor has he any substitute for the use of these arts as the condition of business survival. The problem is rooted in much more stubborn sociological and business conditions than he takes time to explore. Not only a thoroughgoing shift in popular attitudes, but also a drastic modification of business organization and practice would be required. On how to make headway on this front, Galbraith provides no lead.

3. Turning to a more technical point, I have no question that Galbraith's criticism of the way some economists apply the theory of consumer choice is well-taken. The theory serves a perfectly legitimate role in relation to the role of "economic sovereignty" in competitive markets. But economists play a game of hide-and-seek with it. As "scientists," they allege, it is no part of their function to go behind the rationale of individual choices. At the same time, they tend to get the theory entangled in a lopsided philosophy of liberty and a welter of

"welfare propositions." These serve not only to distort the nature of problems of public policy involving collective action; they also obscure, or even deny, the necessity of qualitative thinking in the field of consumption. Galbraith is well-advised to spotlight this potent enemy to his whole line of approach.

4. The corollary to Galbraith's central thesis is, of course, an expanded public role in providing services. To my mind, his argument on this point is persuasive so far as it goes. But the subject is not free both of debating points and of real difficulties. In the first place, it can be shown that public expenditures have been rising at a faster rate than national income. This is not an important point in itself, since it does not isolate the rise in defense costs, and ignores the relative merits of the alternative uses of resources. In the second place, the question of the effect of higher taxes on business incentives arises. Galbraith tries to outflank this one by his sales tax proposal. But his principal reason for this proposal appears to be to keep the sleeping dog of inequality asleep. As I have suggested earlier, this is not a dog that will stay asleep. So the incentive question is brought back into the picture for more discussion than Galbraith gives it and more than I can attempt here.

Another type of question centers on the capacity of actual political processes to produce satisfactory results. Colin Clark, apart from his ideas on taxation, opposes the proposals on the grounds of the incompetence and corruption of public officials. More important is the power of all sorts of pressure groups to divert funds from the public treasury in their own behalf. Galbraith does not face this question squarely. So far as he deals with such activity, he interprets it as part of the general effort to eliminate insecurity. Since he is "for" security, he creates the impression of something like blanket endorsement of such efforts. He rather summarily sidesteps any effort to apply either

economic or moral tests. This is a pity, because I think the difficulty is not in his basic thinking, but in his treatment.

Expansion of the public economy involves a political process, and not all aspects of this process are going to be pretty. A good deal of nonsense is talked about pressure groups in a sort of blanket condemnation. Such groups are in fact a primary means by which proposals for the public agenda originate—good, bad, and indifferent. Proposals have to be sorted out. Galbraith neglects this side of the problem, and tends to assume an outcome acceptable to his critical judgment. To support important expansion of the public economy requires a certain optimism concerning the potentialities of the democratic process. In Galbraith's defense, it may be said that, in the absence of such hopefulness, there would be little point in even inquiring how we might climb onto a higher trajectory of well-being, where well-being takes on new qualitative meanings.

The fact that Galbraith never quantifies his proposals takes some of the edge off them. He does not even suggest at what point of distribution of resources between private and public uses we might begin to consider the "social balance" satisfactory. J. M. Clark and many other economists, sociologists, and political scientists have pointed out why and where modern urban and industrial conditions require increase in the public services. Galbraith's argument suggests that such increase can be had for the mere sacrifice of what in any case is useless, meaningless, or worse. But how far this switchover could defensibly be carried he fails to consider. Whether he is far out in the front of the vanguard, or a fairly conservative member of the forward-looking ranks, one has no way of judging.

5. The least satisfactory part of Galbraith's argument is his discussion of the problem of inflation. Here he deeply concurs in the "con-

ventional wisdom" that inflation is a "bad thing." He supports the opinion, widely held in "reactionary" circles, that it can be curbed only by maintaining a substantial margin of unemployment. His only originality here is a plan for looking after the unemployed more generously.

At a more technical level stands his adverse view of the possible effectiveness of monetary and fiscal policies. He is, I think, trapped into under-estimating them by his desire to highlight his views on the degree to which inflation may originate in other quarters than easy credit and excessive money demand. His analysis of the wage-price-profit spiral is thought-provoking and, within proper limits, no doubt valid. But it has to be located within, and not substituted for, a much broader examination of the sources of inflation.

Every economist is, of course, aware of the difficulties of making full employment and price stability run in double harness. It may not even be possible, and Galbraith is correct in pointing out (what are economic commonplaces) the economic dangers in using monetary and fiscal policy to the point of full effectiveness, and the accompanying political inhibitions. He is also correct in pointing out that they have discriminatory effects upon different segments of the economy. But it is hardly to be doubted that they are still useful instruments which, wisely used, will relieve the burden to be placed on other methods of control. I do not think that Galbraith would disagree. He has, however, so placed his emphasis as to invite another interpretation.

The impression is hard to shake off that there is some ambiguity, if not actual inconsistency, in the argument. Or perhaps it is only obscurity. As I understand him, Galbraith reads monetary policy out on the grounds (1) that it does not effectively reach the persistent sources of inflation, (2) that it is highly discriminatory among sectors of the economy,

and (3) that if effectively used, it presents great dangers in the most mercurial area, that of business investment. As to fiscal policy, if I understand him correctly, it is the proper agency through which to create the precautionary amount of unemployment needed to prevent inflation, but even here he underlines the dangers in the investment sphere. He is skeptical of its effective use because of political opposition deriving both from the business community and from the labor community which backs a full employment policy. It is this skepticism which leads him on to consider the possible necessity of selective price and wage control.

The analysis is sketchy, and makes no strong impression on the mind except in a negative way, as to the barriers to effective use of monetary and fiscal policies. There is no full-blown presentation of the sources of inflation, nor any review of the best professional thinking on the subject. The sharpest policy issue of all is completely passed over—the view that a minor degree of controlled inflation with full employment is the lesser evil among all the available alternatives. Even when assuming that full employment will be the over-riding principle of policy, he turns to direct price and wage control without balancing it against controlled inflation. It is not a pleasant pair of alternatives from which to choose, but there can be reasonable difference of opinion about which is the lesser evil, if such a choice has actually to be made.

For the serious shortcomings of the inflation analysis, Galbraith might plead a partially valid defense of unavoidable brevity. It has provided him a context within which to put a few of his pet ideas on consumer credit, price-wage relations, monetary policy and the pressure of political forces. Perhaps that was all it was intended to do. It has, however, the appearance of attempting to do more. That is where it falls short.

6. The way in which an economist deals with the subject of inflation always discloses something of his "vision" of the future structural and operational characteristics of the economic system, something indeed of his economic philosophy. At that level, some of the issues are nicely joined by Neil Jacoby's article in the present number of this journal. Jacoby, like Galbraith, finds formidable obstacles to the effective application of monetary and fiscal policy, arising out of inflexible prices and the characteristics of market structure. As a remedy, he seems to look to a restoration of competitive conditions sufficiently far-reaching that flexible prices and mobile resources will respond more readily to monetary and fiscal measures. If this remedy is not forthcoming, then Jacoby, like Galbraith and others, will have to begin looking for other remedies supplementary to monetary and fiscal policy.

Galbraith, by contrast, not only disbelieves in any such intense reactivation of competitive forces, but considers it positively undesirable. Not that he puts competition right out of the picture as a useful regulating influence; but his sympathy for efforts to achieve economic security, joined with his prior principle of "countervailing power," causes him to place the central problems of economic policy in the context of well-established economic power positions. The state thereby necessarily becomes involved in lines of action which would be irrelevant under conditions of thoroughgoing competitive organization.

These contrasting visions, or philosophies, present probably the most fundamental cleavage in contemporary economic opinion. Many people try to patrol both sides of the street, or sit on the fence. It is not necessary for anyone to choose an extreme position on either wing; but in due course the major alignment must fall in one direction or the other. For myself, I think the alignment within which Galbraith defines his position more likely to predominate,

and therefore to furnish the environment within which the ongoing processes of social adjustment must be accomplished.

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These notes will suggest that *The Affluent Society* is not a book which anyone will swallow whole. It contains interpretations of fact which are subject to reasonable differences of interpretation. It presents opinions upon which reasonable men may disagree. The technical economic analysis is at some points less than adequate. But these are secondary defects in a book which is not merely interesting and stimulating, but in a sense pathbreaking. There was a period earlier in this century when Social Economics was the arena of active discussion in both its meanings—as critical commentary on economic institutions and ideas, and as con-

structive thinking on the means of social improvement. These realms of intellectual discourse have fallen into a state of extreme neglect. J. M. Clark almost single-handed among outstanding economists has kept the tradition alive. Galbraith moves in as the strongest recent recruit to the revival of this excellent tradition.

In the sphere which it enters, *The Affluent Society* is only a preliminary exercise. It is, as he says, primarily an exercise in destructive thought. Much intellectual travail will be required to formulate goals and policies suitable to the changing circumstances of American life, and much political travail to give them effect. It takes an act of faith to believe that the human race, or its American membership, may successfully engage in constructive thought and intelligent collective action in its own best behalf.

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*Our new way of getting rich is to buy things from one another that we do not want at prices we cannot pay on terms we cannot meet because of advertising we do not believe.*

Robert M. Hutchins